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THE PSYCHOLOGICAL ASPECTS OF THE CULTURE-ENVIRONMENT RELATION[1]

BY CLARK WISSLER

A DISCUSSION of environment and culture from the psychological side is most certain to dip deep into the whole psychological problem underlying culture and will perhaps lead us far afield. At the outset, it may not be amiss to try a very old-fashioned method: the consideration of extreme hypothetical cases. So let us assume for the moment that there is a direct causal relation, or that the physical environment is the sole cause, and culture the effect. If this were true, then what about the life of man? It seems that under such conditions human beings would have little need for intelligence, that quality then being most needed by the environment, since it must needs be the producer. Further, on this assumption, it is not clear how culture could in any way result from conscious processes as we understand that term, but must needs be an unconscious function, or at least an automatic one, like the circulation, assimilation, etc. Of course, our major assumption is here quite fanciful and may be dismissed at once, after having served to call our attention to the importance of the conscious element.

Now, if we face about and assume that all culture is the result of intelligence or conscious activities of the individual mind, what

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then of the environment? Here we imply that cultural traits are all "constructs," ideational creations of the individuals in the group, accumulated and conserved, it is true; but nevertheless conscious constructs in their inception. Now, if we qualify our assumption to imply that such constructs are conceived and born entirely from within the mental life, we seem to have the antithesis of our first assumption. While most of us may be disposed to feel that this is nearer the truth than the former, we must still recognize its possibly extreme character. That the conscious life does construct (produce) we know; but we also find it necessary to admit that external things do play a part. Hence, we may inquire if the reaction point of view cannot be taken as a statement of the culture environment relation. By reaction we mean the conception that external things and relations impress the mind so as to be at least the occasion for return actions. The reaction conception is, of course, a kind of analogy by which all mental processes are considered fundamentally reducible to stimuli and movements, exemplified in the simple reaction phenomena as defined in psychological laboratories. It is doubtful in how far this analogy can be taken as a legitimate inference, but it seems safe to assume that the environment, or things without, do make impressions, and so lead to action. The problem for us is, however, Do such stimuli or impressions determine or modify culture? This is not easily disposed of.

Though it can neither be proved nor disproved, it seems probable that in our mental lives there are various levels between which there is little or no correlation. Thus, it may be that our reactions to mere external stimuli are on a different level from that upon which operate social, artistic, religious, and other activities entering into the cultural complex. This is made probable from our experience with the tests of the psychological laboratory. When these were first discovered it was assumed that we had in hand the means of accurately estimating a person's ability and capacity; but an extended trial brought out the point that there seemed to be no direct relation between the work of our everyday lives and the elemental activities tested. The one seems to be on a different level from

the other. Further, it seems that the analogy between one's work and the culture of a people is close enough to warrant a level hypothesis. Many observations seem to support the existence of such levels in our own lives, at least. Then, if such there be, the chief elements of what we call culture may fall entirely without the direct sphere of reaction to the environment. Again, on the other hand, in so far as the reaction analogy holds, it may be so fundamental that it falls well within the universal human when it ceases to have any significance for culture. Culture is of great variety, and hence must result from activities that tend toward divergent and accidental ends. The marked fundamental psychological uniformity of human minds seems to eliminate all the fundamental psychic elements from the culture problem. Vision, emotion, judgment, etc., must be about the same for all human beings; it is only the products of these activities that appear different. Hence, we must consider the query, Does environment, then, cause these differences by furnishing various cultural materials to the individual ethnic groups? Thus, all we have pointed out above may be true and still give environment the lion's share in determining culture in so far as it furnishes the bricks and mortar for the builders. However, few anthropologists would, we take it, agree that cultures differ, not in plans and the relations of facts, but only in their elements. (It seems that some of my associates, at least, have been rather successfully engaged with those who would hold that all cultures were ordered on the same plan or scheme and that all the differences observed were only those of bricks and mortar.) It is true, however, that the objective materials offered by the environment do influence technology and, it seems, chiefly in the brick and mortar sense. Yet not all of technology is so dependent. Thus, the materials for pottery and other plastic arts are usually at hand in every environment, as are also textile materials. Then, when we turn to religion, social organization, and language, the elements (or materials) in the environment seem too objective (or material) to be taken as the chief materials for such "constructs". But to return to the reaction view of culture and environment: if there is much in this point of view, a person moving to a new

environment should show profound changes in his type of thought and action. We ourselves feel some change when we go elsewhere, but that there is a real cultural change is not admissible. The reactions seem to be on a different level and leave our culture unchanged. We may, therefore, set it down as probable that the stimuli of the environment and the reactions thereto are so fundamentally alike for all human beings that they operate on a different level from the activities that produce culture.

Before facing the consequence of such an assumption we may turn to another problem. Culture is essentially a social product, an accumulation, systematized in some manner. The French school of anthropology seems to have taken the social mind as a very important factor in the production of culture. I think most people have some difficulty in conceiving a social mind: at least, I cannot conceive of it unless it be something like the following. It is difficult to see how one mind alone could arrive at a fund of knowledge worthy of being called culture. Further, almost every invention can with difficulty be assigned to one individual because many minds were directed toward the same problem and more than one ready with the solution. Thus, we seem to have a total result over and above any single mind, an activity of which no one individual can be wholly conscious; whence knowledge seems to be formulated not by any one mind but by many, the aggregate whole of the conscious elements forming something that cannot of itself be conscious, but yet seems to produce elements of culture. In this sense a social mind is intelligible to me. Certainly no one person alone could reach the result.

Now, if culture is so produced, we must again face directly the question as to whether the production of cultural elements is a conscious or an unconscious process. For my part, I doubt its being unconscious. We are often admonished that in language the grammatical structure must have been worked out unconsciously by the group mind because no one is conscious of such an order; but it may be seriously questioned if in their inception all such forms were not the conscious thoughts of individuals. We admit, of course, that no one thought it all out; but, on the other hand, we

believe each new form was first the conscious act of one person. It is said that language is used automatically, and so it is, but a psychologist would find it difficult to conceive of an automatic habit that was not in its beginning certainly conscious. True, the very accumulative nature of culture makes it unnecessary for us to construct and invent anew all its elements, but our question is whether it can be proved that any of these elements were other than conscious productions at the outset.

This brings us to another important problem, the rôle of instinct in culture. It has been customary to conceive of instinct as the antithesis of intellect, but this seems not exactly adequate. Anyway, the relative parts these two kinds of activity play in the lives of animals as well as human beings is one of the world's riddles. Instinct is something we all know perfectly until we try to define it; then it eludes us like the mythical goddess of fame. Yet the problem is real. I feel that many of our problems hinge upon this relation. Let us take for example the making of stone implements, the eoliths and paleoliths, or elementary forms. Now, how was this first chipping done? Was it instinctive, i. e., was it like a bird building a nest or a spider spinning a web? Or was it rational, i. e., a true discovery by one like ourselves? One or the other it must have been. I fancy now that some of you are disposed to say that this is a matter about which it is even foolish to speculate; but is it not true that the whole culture-environment question is in the same category? On the other hand, it is a matter of some importance, for according to your answer will vary your interpretation of culture. If you put this chipping down as instinctive, you must admit that when implements were chipped by modern races (when observed by European explorers) they did it rationally and consciously; hence, there must have been a transition from one to the other and so we ought to find even now vestiges of the instinctive in culture. It is common to assume an evolution of culture from an animal level up, but few seem to have realized the logical difficulty of assigning the lower levels of culture to the instincts.

On the other hand, if we assume at the outset that the making of

the first flaked tool, the kindling of fire, etc., were mere inventions like gunpowder and the match, we throw all culture into the construct or invention category. By this assumption we escape many difficulties and leave the origin of intelligence (the inventor or producer) to the biologist. It is well for us to be aware that our present point of view in anthropology makes the instinctive hypothesis practically impossible, since we do and must interpret the facts of European archeology in the light of modern cultures. We can all admit that man had and has an instinctive tendency to construct or produce cultural traits, which is the same as the psychologist's admission that the tendency to think may be instinctive; but just from that point on intelligence seems in control.

However, this is a knotty problem and not to be settled here and now. Its consideration here is justifiable because it seems to define more clearly the limitations of certain parts of our general cultural problem. If we throw out instinct and hold fast to the conscious "constructs" alone, we have what may be characterized as the psychic accident theory of culture origin as opposed to the developmental or evolutionary theory. The American school seems to have gone over body and soul to the former; that is, its members deny that culture is in the main determined by anything save the aggregate association of ideas. Since it seems that there are no certain goals toward which association leads, nor prescribed directions, except perhaps its past meshes, we may say that the outcome of any associative activity cannot be predicted from anything we know, and that hence it may be said that when an invention occurs, or a "construct" is made, we have a psychic accident. Whether the American school of anthropologists are prepared to defend this definition of their position, I do not know, but I have a mind that, if they decline to stand for it, they will soon find themselves benevolently assimilated by the traditional English school. Returning to the environment question, the American school must by their position oppose the environment factor, or minimize it, since they tend to make culture the product of psychic activities.

For some years there has been a marked tendency on the part of this school to reduce cultural phenomena to what are called

secondary explanations or associations. It is resolved that the games and rituals, myths and rituals, restrictions to marriage in social groups, graphic designs and symbolic ideas, etc., are all nothing more than secondary associations, that is, the sequence of events happened to bring them together as found, or the people, feeling that they should be together, forsooth, put them together. Now, while this undoubtedly marks a great advance in anthropology, I fear that we are, after all, headed up a blind alley. It is very fine to say that all is explained as an association and that hence psychological laws will ultimately solve the problem, but the psychologists seem often to have felt that associations were the irreducible elements of mental phenomena beyond which we could not go. After all, associations are but notions of togetherness regardless of how, when, or why. Most of us are agreed that the ideation process is much the same for all persons, whence it follows that the flux of ideas, the stream of thought, must have the same general characteristics throughout. Hence, the cultural significance of any particular association is not apparent. But to return from this digression, if the American school holds that most cultural phenomena can be adequately explained as secondary associations and ultimately determined by an appeal to the psychological laws of association, then it is to the human mind, and not to environment, that they must look for the origins of culture.

There is yet another consideration: the environment may be psychological or cultural as well as geographical or physical. What we mean is that the respective groups or tribes within an area collectively create for each in turn an environment. It is therefore proper to ask if this is not an environmental factor and a psychic one in contrast to the physical one. Thus in North America regions like the Southwest, the North Pacific coast, etc., occupied by different linguistic and political groups, but nevertheless manifesting sufficient uniformity to be considered as one of our general culture types, present a peculiar problem unless we assume that each and severally the tribes create a psychological cultural environment. Such an analogy strikes us as being the true statement of the culture-environment relation and as suggesting that after all

the physical environment is in most respects a negligible factor. If culture is at bottom but a system of ideas, refined and clarified like mythology by many minds, it is difficult to see how it can be otherwise than practically independent of the external order of things in so far as it is a scheme of relationships among ideas. Turning again to our conception of cultural environment, it seems to give full play to some well-known principles. For example, we all admit that imitation plays an important rôle in the distribution of cultural traits. Psychologically imitation is objective; that is, we see the results of actions on the part of others and attempt to achieve like ends by assuming the same objective relations. Then it seems likely that a group coming into view of another will seek to emulate their achievements (or be in turn the object of emulation), and so copying their acts as seen in the aggregate, will adopt many unnecessary objective forms. Thus we find tribes in the Plains when hunting buffalo adopting the camp circle and soldier band organization of other tribes with numerous unessential details and ceremonial practices, apparently on the assumption that all are useful in attaining the end desired. Further, the strong suggestive power of the performances of others and their almost certain tendency to break into the stream of individual thought is hereby given recognition, for it is difficult to find a case where different cultures have met in force without leaving their marks on each other.

We may summarize this discussion, then, as follows: The solution of the environment problem depends upon our conception of the nature of culture. Some conclusions must be formed as to whether culture is a conscious "construct" or whether it is or was formerly dependent upon specific instincts. It seems that American anthropologists have taken a position involving the conscious constructive origin for cultures as opposed to a sociologic-evolutionary theory. Upon such an assumption it is difficult to see how the mere external world could be an important factor in determining cultures. On the other hand, there seems to be a psychological cultural environment that is a factor of the first importance. The geographical area seems to be a factor only in so far as it tends to offer bounds or

barriers to a cultural environment, but on the other hand, it seems that the inner geographical character of the area has little weight in determining the particular form of culture produced therein, that being dependent upon peculiar psychological conditions and apparently such conditions as are over and above the fundamental human level. Such a view would lift the race problem, for example, out of the psychological into the cultural level, where it seems to belong, and where it is quite probable that many so far unsuspected functional differences exist. Our discussion has suggested the probability that all activities common to all known peoples are by their very nature negligible factors in the formation of cultures, and that therefore it does not follow that because two peoples show no elemental psychological differences there are not other differences that are significant to culture. Indeed, for those who would take the view that all peoples of the world have the same capacity for culture, the cause for the present unequal distribution of culture values must be assigned either to the environment or to the psychic accident or associational relation. On the other hand, it by no means follows that because the latter seems a true statement of culture origin the initial assumption of equal capacity is justified.

AMERICAN MUSEUM OF NATURAL HISTORY
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LANGUAGE AND ENVIRONMENT[1]

By EDWARD SAPIR

THERE is a strong tendency to ascribe many elements of human culture to the influence of the environment in which the sharers of that culture are placed, some even taking the extreme position of reducing practically all manifestations of human life and thought to environmental influences. I shall not attempt to argue for or against the importance of the influence had by forces of environment on traits of culture, nor shall I attempt to show in how far the influence of environment is crossed by that of other factors. To explain any one trait of human culture as due solely to the force of physical environment, however, seems to me to rest on a fallacy. Properly speaking, environment can act directly only on an individual, and in those cases where we find that a purely environmental influence is responsible for a communal trait, this common trait must be interpreted as a summation of distinct processes of environmental influences on individuals. Such, however, is obviously not the typical form in which we find the forces of environment at work on human groups. In these it is enough that a single individual may react directly to his environment and bring the rest of the group to share consciously or unconsciously in the influence exerted upon him. Whether even a single individual can be truthfully said to be capable of environmental influence uncombined with influences of another character is doubtful, but we may at least assume the possibility. The important point remains that in actual society even the simplest environmental influence is either supported or transformed by social forces. Hence any attempt to consider even the simplest element of culture as due solely to the influence of environment must be termed misleading. The social forces which thus transform the purely environ-

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mental influences may themselves be looked upon as environmental in character in so far as a given individual is placed in, and therefore reacts to, a set of social factors. On the other hand, the social forces may be looked upon, somewhat metaphorically, as parallel in their influence to those of heredity in so far as they are handed down from generation to generation. That these traditional social forces are themselves subject to environmental, among other, changes, illustrates the complexity of the problem of cultural origins and development. On the whole one does better to employ the term "environment" only when reference is had to such influences, chiefly physical in character, as lie outside the will of man. Yet in speaking of language, which may be considered a complex of symbols reflecting the whole physical and social background in which a group of men is placed, it is advantageous to comprise within the term environment both physical and social factors. Under physical environment are comprised geographical characters, such as the topography of the country (whether coast, valley, plain, plateau, or mountain), climate, and amount of rainfall, and what may be called the economic basis of human life, under which term are comprised the fauna, flora, and mineral resources of the region. Under social environment are comprised the various forces of society that mold the life and thought of each individual. Among the more important of these social forces are religion, ethical standards, form of political organization, and art.

According to this classification of environmental influences, we may expect to find two sets of environmental factors reflected in language, assuming for the moment that language is materially influenced by the environmental background of its speakers. Properly speaking, of course, the physical environment is reflected in language only in so far as it has been influenced by social factors. The mere existence, for instance, of a certain type of animal in the physical environment of a people does not suffice to give rise to a linguistic symbol referring to it. It is necessary that the animal be known by the members of the group in common and that they have some interest, however slight, in it before the language of the community is called upon to make reference to this particular

element of the physical environment. In other words, so far as language is concerned, all environmental influence reduces at last analysis to the influence of social environment. Nevertheless it is practical to keep apart such social influences as proceed more or less directly from the physical environment, and those that can not be easily connected with it. Language may be influenced in one of three ways: in regard to its subject matter or content, i. e., in regard to the vocabulary; in regard to its phonetic system, i. e., the system of sounds with which it operates in the building of words; and in regard to its grammatical form, i. e., in regard to the formal processes and the logical or psychological classifications made use of in speech. Morphology, or the formal structure of words, and syntax, or the methods employed in combining words into larger units or sentences, are the two main aspects of grammatical form.

It is the vocabulary of a language that most clearly reflects the physical and social environment of its speakers. The complete vocabulary of a language may indeed be looked upon as a complex inventory of all the ideas, interests, and occupations that take up the attention of the community, and were such a complete thesaurus of the language of a given tribe at our disposal, we might to a large extent infer the character of the physical environment and the characteristics of the culture of the people making use of it. It is not difficult to find examples of languages whose vocabulary thus bears the stamp of the physical environment in which the speakers are placed. This is particularly true of the languages of primitive peoples, for among these culture has not attained such a degree of complexity as to imply practically universal interests. From this point of view the vocabulary of primitive languages may be compared to the vocabularies of particular sections of the population of civilized peoples. The characteristic vocabulary of a coast tribe, such as the Nootka Indians, with its precise terms for many species of marine animals, vertebrate and invertebrate, might be compared to the vocabulary of such European fisher-folk as the Basques of southwestern France and northern Spain. In contrast to such coast peoples may be mentioned the inhabitants of a desert plateau, like the Southern Paiute of Arizona, Nevada, and Utah. In the

vocabulary of this tribe we find adequate provision made for many topographical features that would in some cases seem almost too precise to be of practical value. Some of the topographical terms of this language that have been collected are: divide, ledge, sand flat, semicircular valley, circular valley or hollow, spot of level ground in mountains surrounded by ridges, plain valley surrounded by mountains, plain, desert, knoll, plateau, canyon without water, canyon with creek, wash or gutter, gulch, slope of mountain or canyon wall receiving sunlight, shaded slope of mountain or canyon wall, rolling country intersected by several small hill-ridges, and many others.

In the case of the specialized vocabularies of both Nootka and Southern Paiute, it is important to note that it is not merely the fauna or topographical features of the country as such that are reflected, but rather the interest of the people in such environmental features. Were the Nootka Indians dependent for their food supply primarily on land hunting and vegetable products, despite their proximity to the sea, there is little doubt that their vocabulary would not be as thoroughly saturated as it is with sea lore. Similarly it is quite evident from the presence in Paiute of such topographical terms as have been listed, that accurate reference to topography is a necessary thing to dwellers in an inhospitable semi-arid region; so purely practical a need as definitely locating a spring might well require reference to several features of topographical detail. How far the interest in the physical environment rather than its mere presence affects the character of a vocabulary may be made apparent by a converse case in English. One who is not a botanist, or is not particularly interested for purposes of folk medicine or otherwise in plant lore, would not know how to refer to numberless plants that make up part of his environment except merely as "weeds", whereas an Indian tribe very largely dependent for its food supply on wild roots, seeds of wild plants, and other vegetable products, might have precise terms for each and every one of these nondescript weeds. In many cases distinct terms would even be in use for various conditions of a single plant species, distinct reference being made as to whether it is raw or cooked,

or of this or that color, or in this or that stage of growth. In this way special vocabularies having reference to acorns or camass might be collected from various tribes of California or Oregon. Another instructive example of how largely interest determines the character of a vocabulary is afforded by the terms in several Indian languages for sun and moon. While we find it necessary to distinguish sun and moon, not a few tribes content themselves with a single word for both, the exact reference being left to the context. If we complain that so vague a term fails to do justice to an essential natural difference, the Indian might well retaliate by pointing to the *omnium gatherum* character of our term "weed" as contrasted with his own more precise plant vocabulary. Everything naturally depends on the point of view as determined by interest. Bearing this in mind, it becomes evident that the presence or absence of general terms is to a large extent dependent on the negative or positive character of the interest in the elements of environment involved. The more necessary a particular culture finds it to make distinctions within a given range of phenomena, the less likely the existence of a general term covering the range. On the other hand, the more indifferent culturally are the elements, the more likely that they will all be embraced in a single term of general application. The case may be summarized, if example can summarize, by saying that to the layman every animal form that is neither human being, quadruped, fish, nor bird, is a bug or worm. To this same type of layman the concept and corresponding word "mammal" would, for a converse reason, be quite unfamiliar.

There is an obvious difference between words that are merely words, incapable of further analysis, and such words as are so evidently secondary in formation as to yield analysis to even superficial reflection. A lion is merely a lion, but a mountain-lion suggests something more than the animal referred to. Where a transparent descriptive term is in use for a simple concept, it seems fair in most cases to conclude that the knowledge of the environmental element referred to is comparatively recent, or at any rate that the present naming has taken place at a comparatively recent time. The destructive agencies of phonetic change would in the

long run wear down originally descriptive terms to mere labels or unanalyzable words pure and simple. I speak of this matter here because the transparent or untransparent character of a vocabulary may lead us to infer, if somewhat vaguely, the length of time that a group of people has been familiar with a particular concept. People who speak of lions have evidently been familiar with that animal for many generations. Those who speak of mountain lions would seem to date their knowledge of these from yesterday. The case is even clearer when we turn to a consideration of place-names. Only the student of language history is able to analyze such names as Essex, Norfolk, and Sutton into their component elements as East Saxon, North Folk, and South Town, while to the lay consciousness these names are etymological units as purely as are "butter" and "cheese". The contrast between a country inhabited by an historically homogeneous group for a long time, full of etymologically obscure place-names, and a newly settled country with its Newtowns, Wildwoods, and Mill Creeks, is apparent. Naturally much depends on the grammatical character of the language itself; such highly synthetic forms of speech as are many American Indian languages seem to lose hold of the descriptive character of their terms less readily than does English, for instance.

We have just seen that the careful study of a vocabulary leads to inferences as to the physical and social environment of those who use the vocabulary; furthermore, that the relatively transparent or untransparent character of the vocabulary itself may lead us to infer as to the degree of familiarity that has been obtained with various elements of this environment. Several students, notably Schrader, in dealing with Indo-Germanic material, have attempted to make a still more ambitious use of the study of vocabularies of related languages. By selecting such words as are held in common by all, or at least several, of a group of genetically related languages, attempts have been made to gather some idea of the vocabulary of the hypothetical language of which the forms of speech investigated are later varieties, and in this way to get some idea of the range of concepts possessed by the speakers of the reconstructed

language. We are here dealing with a kind of linguistic archeology. Undoubtedly many students of Indo-Germanic linguistics have gone altogether too far in their attempts to reconstruct culture from comparative linguistic evidence, but the value of evidence obtained in this way can not be summarily denied, even granted that words may linger on long after their original significance has changed. The only pity is that in comparing languages that have diverged very considerably from each other, and the reconstructed prototype of which must therefore point to a remote past, too little material bearing on the most interesting phases of culture can generally be obtained. We do not need extended linguistic comparison to convince us that at a remote period in the past people had hands and fathers, though it would be interesting to discover whether they knew of the use of salt, for instance. Naturally the possibility of secondary borrowing of a word apparently held in common must always be borne in mind. Yet, on the whole, adequate knowledge of the phonology and morphology of the languages concerned will generally enable a careful analyst to keep apart the native from the borrowed elements. There has been too little comparative linguistic work done in America as yet to enable one to point to any considerable body of tangible results of cultural interest derived from such study, yet there is little doubt that with more intensive study such results will be forthcoming in greater degree. Surely a thoroughgoing study of Algonkin, Siouan, and Athabascan vocabularies from this point of view will eventually yield much of interest. As a passing example of significance, I shall merely point out that Nahua *oco-tl*, "Pinus tenuifolia", and Southern Paiute *oγó-mp'ᵁ*, "fir", point to a Uto-Aztekan stem *oko-* that has reference to some variety of pine or fir.

If the characteristic physical environment of a people is to a large extent reflected in its language, this is true to an even greater extent of its social environment. A large number, if not most, of the elements that make up a physical environment are found universally distributed in time and place, so that there are natural limits set to the variability of lexical materials in so far as they give expression to concepts derived from the physical world. A

culture, however, develops in numberless ways and may reach any degree of complexity. Hence we need not be surprised to find that the vocabularies of peoples that differ widely in character or degree of culture share this wide difference. There is a difference between the rich, conceptually ramified vocabulary of a language like English or French and that of any typical primitive group, corresponding in large measure to that which obtains between the complex culture of the English-speaking or French-speaking peoples of Europe and America with its vast array of specialized interests, and the relatively simple undifferentiated culture of the primitive group. Such variability of vocabulary, as reflecting social environment, obtains in time as well as place; in other words, the stock of cultural concepts and therefore also the corresponding vocabulary become constantly enriched and ramified with the increase within a group of cultural complexity. That a vocabulary should thus to a great degree reflect cultural complexity is practically self-evident, for a vocabulary, that is, the subject matter of a language, aims at any given time to serve as a set of symbols referring to the culture background of the group. If by complexity of language is meant the range of interests implied in its vocabulary, it goes without saying that there is a constant correlation between complexity of language and culture. If, however, as is more usual, linguistic complexity be used to refer to degree of morphologic and syntactic development, it is by no means true that such a correlation exists. In fact, one might almost make a case for an inverse correlation and maintain that morphologic development tends to decrease with increase of cultural complexity. Examples of this tendency are so easy to find that it is hardly worth our while going into the matter here. It need merely be pointed out that the history of English and French shows a constant loss in elaborateness of grammatical structure from their earliest recorded forms to the present. On the other hand, too much must not be made of this. The existence of numerous relatively simple forms of speech among primitive peoples discourages the idea of any tangible correlation between degree or form of culture and form of speech.

Is there, then, no element of language but its mere concrete sub-

ject matter or vocabulary that can be shown to have any relation to the physical and social environment of the speakers? It has sometimes been claimed that the general character of the phonetic system of a language is more or less dependent on physical environment, that such communities as dwell in mountainous regions or under other conditions tending to make the struggle for existence a difficult one develop acoustically harsh forms of speech, while such as are better favored by nature make use of relatively softer phonetic systems. Such a theory is as easily disproved as it seems plausible. It is no doubt true that examples may be adduced of harsh phonetic systems in use among mountaineers, as for instance those of various languages spoken in the Caucasus; nor is it difficult to find instances of acoustically pleasant forms of speech in use among groups that are subjected to a favorable physical environment. It is just as easy, however, to adduce instances to the contrary of both of these. The aboriginal inhabitants of the Northwest Coast of America found subsistence relatively easy in a country abounding in many forms of edible marine life; nor can they be said to have been subjected to rigorous climatic conditions; yet in phonetic harshness their languages rival those of the Caucasus. On the other hand, perhaps no people has ever been subjected to a more forbidding physical environment than the Eskimos, yet the Eskimo language not only impresses one as possessed of a relatively agreeable phonetic system when compared with the languages of the Northwest Coast, but may even perhaps be thought to compare favorably with American Indian languages generally. There are many cases, to be sure, of distinct languages with comparable phonetic systems spoken over a continuous territory of fairly uniform physical characteristics, yet in all such cases it can readily be shown that we are dealing not with the direct influence of the environment itself, but with psychological factors of a much subtler character, comparable perhaps to such as operate in the diffusion of cultural elements. Thus the phonetic systems of Tlingit, Haida, Tsimshian, Kwakiutl, and Salish are not similar because belonging to languages whose speakers are placed in about the same set of environmental conditions, but merely because these speakers are geographically contiguous to

each other and hence capable of exerting mutual psychological influence.

Leaving these general considerations on the lack of correlation between physical environment and a phonetic system as a whole we may point to several striking instances, on the one hand, of phonetic resemblances between languages spoken by groups living in widely different environments and belonging to widely different cultural strata, on the other hand, of no less striking phonetic differences that obtain between languages spoken in adjoining regions of identical or similar environment and sharing in the same culture. These examples will serve to emphasize the point already made. The use of pitch accent as a significant element of speech is found in Chinese and neighboring languages of southeastern Asia, Ewe and other languages of western Africa, Hottentot in South Africa, Swedish, Tewa in New Mexico, and Takelma in southwestern Oregon. In this set of instances we have illustrated practically the whole gamut of environmental and cultural conditions. Nasalized vowels occur not only in French and Portuguese, but also in Ewe, Iroquois, and Siouan. "Fortis" consonants, i. e., stop consonants pronounced with simultaneous closure and subsequent release of glottal cords, are found not only in many languages of America west of the Rockies, but also in Siouan, and in Georgian and other languages of the Caucasus. Glottal stops as significant elements of speech are found not only plentifully illustrated in many, perhaps most, American Indian languages, but also in Danish and in Lettish, one of the Letto-Slavic languages of Western Russia. So highly peculiar sounds as the hoarse ḥâ and strangulated-sounding 'ain of Arabic are found in almost identical form in Nootka. And so on indefinitely. On the other hand, while the English and French may, on the whole, be said to be closely related culturally, there are very striking differences in the phonetic systems made use of by each. Turning to aboriginal America, we find that two such closely related groups of tribes, from a cultural standpoint, as the Iroquois and neighboring eastern Algonkins speak widely different languages, both phonetically and morphologically. The Yurok, Karok, and Hupa, all three occupying a small territory

in northwestern California, form a most intimate cultural unit. Yet here again we find that the phonetic differences between the languages spoken by these tribes are great, and so on indefinitely again. There seems nothing for it, then, but to postulate an absolute lack of correlation between physical and social environment and phonetic systems, either in their general acoustic aspect or in regard to the distribution of particular phonetic elements.

One feels inclined to attribute a lack of correlation between phonetic system and environment to the comparatively accidental character of a phonetic system in itself; or, to express it somewhat more clearly, to the fact that phonetic systems may be thought to have a quasi-mechanical growth, at no stage subject to conscious reflection and hence not likely in any way to be dependent on environmental conditions, or, if so, only in a remotely indirect manner. Linguistic morphology, on the other hand, as giving evidence of certain definite modes of thought prevalent among the speakers of the language, may be thought to stand in some sort of relation to the stock of concepts forming the mental stock in trade, as it were, of the group. As this stock of concepts, however, is necessarily determined by the physical and social environment, it follows that some sort of correlation between these environments and grammatical structure might be looked for. And yet the negative evidence is as strong in this case as in the parallel one just disposed of. We may consider the subject matter of morphology as made up of certain logical or psychological categories of thought that receive grammatical treatment and of formal methods of expressing these. The distinct character of these two groups of morphological phenomena may be illustrated by pointing out that neighboring languages may influence, or at any rate resemble, each other in the one set without necessary corresponding influence or resemblance in the other. Thus, the device of reduplication is widespread in American Indian languages, yet the concepts expressed by this method vary widely. Here we deal with a widespread formal device as such. Conversely, the notion of inferential activity, that is, of action, knowledge of which is based on inference rather than personal authority is also found widely expressed in American languages, but

by means of several distinct formal processes. Here we deal with a widespread grammatically utilized category of thought as such.

Now, in rummaging through many languages one finds numerous instances both of striking similarities in the formal processes of morphology and of striking similarities or identities of concepts receiving grammatical treatment, similarities and identities that seem to run in no kind of correspondence to environmental factors. The presence of vocalic changes in verb or noun stems in Indo-Germanic languages, Semitic, Takelma, and Yana may be given as an example of the former. A further example is the presence of the infixation of grammatical elements in the body of a noun or verb stem in Malayan, Mon-Khmer, and Siouan. It will be noticed that despite the very characteristic types of formal processes that I have employed for illustrative purposes they crop up in markedly distinct environments. A striking example, on the other hand, of a category of thought of grammatical significance found irregularly distributed and covering a wide range of environments, is grammatical gender based on sex. This we find illustrated in Indo-Germanic, Semitic, Hottentot of South Africa, and Chinook of the lower Columbia. Other striking examples are the existence of syntactic cases, primarily subjective and objective, in Indo-Germanic, Semitic, and Ute; and the distinction between exclusive and inclusive duality or plurality of the first person found in Kwakiutl, Shoshonean, Iroquois, Hottentot, and Melanesian.

The complementary evidence for such lack of correlation as we have been speaking of is afforded by instances of morphologic differences found in neighboring languages in use among peoples subjected to practically the same set of environmental influences, physical and social. A few pertinent examples will suffice. The Chinook and Salish tribes of the lower Columbia and west coast of Washington form a cultural unit set in a homogeneous physical environment, yet far-reaching morphologic differences obtain between the languages of the two groups of tribes. The Salish languages make a superabundant use of reduplication for various grammatical purposes, whereas in Chinook reduplication, though occurring in a limited sense, has no grammatical significance. On the other hand, the system of sex gender rigidly carried out in the

noun and verb system of Chinook is shared by the Coast Salish dialects only in so far as prenominal articles are found to express distinctions of gender, while the interior Salish languages lack even this feature entirely. Perhaps an even more striking instance of radical morphological dissimilarity in neighboring languages of a single culture area is afforded by Yana and Maidu, spoken in north central California. Maidu makes use of a large number of grammatical prefixes and employs reduplication for grammatical purposes to at least some extent. Yana knows nothing of either prefixes or reduplication. On the other hand, Maidu lacks such characteristic Yana features as the difference in form between the men's and women's language, and the employment of several hundreds of grammatical suffixes, some of them expressing such concrete verbal force as to warrant their being interpreted rather as verb stems in secondary position than as suffixes proper. To turn to the Old World, we find that Hungarian differs from the neighboring Indo-Germanic languages in its lack of sex gender and in its employment of the principle of vocalic harmony, a feature which, though primarily phonetic in character, nevertheless has an important grammatical bearing.

In some respects the establishment of failure of phonetic and morphologic characteristics of a language to stand in any sort of relation to the environment in which it is spoken seems disappointing. Can it be, after all, that the formal groundwork of a language is no indication whatsoever of the cultural complex that it expresses in its subject matter? If we look more sharply, we shall find in certain cases that at least some elements that go to make up a cultural complex are embodied in grammatical form. This is true particularly of synthetic languages operating with a large number of prefixes or suffixes of relatively concrete significance. The use in Kwakiutl and Nootka, for instance, of local suffixes defining activities as taking place on the beach, rocks, or sea, in cases where in most languages it would be far more idiomatic to omit all such reference, evidently points to the nature of the physical environment and economic interests connected therewith among these Indians. Similarly, when we find that such ideas as those of buying, giving a feast of some kind of food, giving a potlatch for some person, and

asking for a particular gift at a girl's puberty ceremony, are expressed in Nootka by means of grammatical suffixes, we are led to infer that each of these acts is a highly typical one in the life of the tribe, and hence constitute important elements in its culture. This type of correlation may be further exemplified by the use in Kwakiutl, Nootka, and Salish of distinct series of numerals for various classes of objects, a feature which is pushed to its greatest length, perhaps, in Tsimshian. This grammatical peculiarity at least suggests definite methods of counting, and would seem to emphasize the concept of property, which we know to be so highly developed among the West Coast Indians. Adopting such comparatively obvious examples as our cue, one might go on indefinitely and seize upon any grammatical peculiarity with a view to interpreting it in terms of culture or physical environment. Thus, one might infer a different social attitude toward woman in those cases where sex gender is made grammatical use of. It needs but this last potential example to show to what flights of fancy this mode of argumentation would lead one. If we examine the more legitimate instances of cultural-grammatical correlation, we shall find that it is not, after all, the grammatical form as such with which we operate, but merely the content of that form; in other words, the correlation turns out to be, at last analysis, merely one of environment and vocabulary, with which we have already become familiar. The main interest morphologically in Nootka suffixes of the class illustrated lies in the fact that certain elements used to verbify nouns are suffixed to noun stems. This is a psychological fact which can not well be correlated with any fact of culture or physical environment that we know of. The particular manner in which a noun is verbified, or the degree of concreteness of meaning conveyed by the suffix, are matters of relative indifference to a linguist.

We seem, then, perhaps reluctantly, forced to admit that, apart from the reflection of environment in the vocabulary of a language, there is nothing in the language itself that can be shown to be directly associated with environment. One wonders why, if such be the case, so large a number of distinct phonetic systems and types of linguistic morphology are found in various parts of the world. Perhaps the whole problem of the relation between culture and

environment generally, on the one hand, and language, on the other, may be furthered somewhat by a consideration simply of the rate of change or development of both. Linguistic features are necessarily less capable of rising into the consciousness of the speakers than traits of culture. Without here attempting to go into an analysis of this psychological difference between the two sets of phenomena, it would seem to follow that changes in culture are the result, to at least a considerable extent, of conscious processes or of processes more easily made conscious, whereas those of language are to be explained, if explained at all, as due to the more minute action of psychological factors beyond the control of will or reflection. If this be true, and there seems every reason to believe that it is, we must conclude that cultural change and linguistic change do not move along parallel lines and hence do not tend to stand in a close causal relation. This point of view makes it quite legitimate to grant, if necessary, the existence at some primitive stage in the past of a more definite association between environment and linguistic form than can now be posited anywhere, for the different character and rate of change in linguistic and cultural phenomena, conditioned by the very nature of those phenomena, would in the long run very materially disturb and ultimately entirely eliminate such an association.

We may conceive, somewhat schematically, the development of culture and language to have taken place as follows: A primitive group, among whom even the beginnings of culture and language are as yet hardly in evidence, may nevertheless be supposed to behave in accordance with a fairly definite group psychology, determined, we will suppose, partly by race mind, partly by physical environment. On the basis of this group psychology, whatever tendencies it may possess, a language and a culture will slowly develop. As both of these are directly determined, to begin with, by fundamental factors of race and physical environment, they will parallel each other somewhat closely, so that the forms of cultural activity will be reflected in the grammatical system of the language. In other words, not only will the words themselves of a language serve as symbols of detached cultural elements, as is true of languages at all periods of development, but we may suppose the

grammatical categories and processes themselves to symbolize corresponding types of thought and activity of cultural significance. To some extent culture and language may then be conceived of as in a constant state of interaction and definite association for a considerable lapse of time. This state of correlation, however, can not continue indefinitely. With gradual change of group psychology and physical environment more or less profound changes must be effected in the form and content of both language and culture. Language and culture, however, are obviously not the direct expression of racial psychology and physical environment, but depend for their existence and continuance primarily on the forces of tradition. Hence, despite necessary modifications in either with the lapse of time, a conservative tendency will always make itself felt as a check to those tendencies that make for change. And here we come to the crux of the matter. Cultural elements, as more definitely serving the immediate needs of society and entering more clearly into consciousness, will not only change more rapidly than those of language, but the form itself of culture, giving each element its relative significance, will be continually shaping itself anew. Linguistic elements, on the other hand, while they may and do readily change in themselves, do not so easily lend themselves to regroupings, owing to the subconscious character of grammatical classification. A grammatical system as such tends to persist indefinitely. In other words, the conservative tendency makes itself felt more profoundly in the formal groundwork of language than in that of culture. One necessary consequence of this is that the forms of language will in course of time cease to symbolize those of culture, and this is our main thesis. Another consequence is that the forms of language may be thought to more accurately reflect those of a remotely past stage of culture than the present ones of culture itself. It is not claimed that a stage is ever reached at which language and culture stand in no sort of relation to each other, but simply that the relative rates of change of the two differ so materially as to make it practically impossible to detect the relationship.

Though the forms of language may not change as rapidly as those of culture, it is doubtless true that an unusual rate of cultural change is accompanied by a corresponding accelerated rate of

change in language. If this point of view be pushed to its legitimate conclusion, we must be led to believe that rapidly increasing complexity of culture necessitates correspondingly, though not equally rapid, changes in linguistic form and content. This view is the direct opposite of the one generally held with respect to the greater conservatism of language in civilized communities than among primitive peoples. To be sure, the tendency to rapid linguistic change with increasingly rapid complexity of culture may be checked by one of the most important elements of an advanced culture itself, namely, the use of a secondary set of language symbols necessarily possessing greater conservatism than the primarily spoken set of symbols and exerting a conservative influence on the latter. I refer to the use of writing. In spite of this, however, it seems to me that the apparent paradox that we have arrived at contains a liberal element of truth. I am not inclined to consider it an accident that the rapid development of culture in western Europe during the last 2000 years has been synchronous with what seems to be unusually rapid changes in language. Though it is impossible to prove the matter definitely, I am inclined to doubt whether many languages of primitive peoples have undergone as rapid modification in a corresponding period of time as has the English language.

We have no time at our disposal to go more fully into this purely hypothetical explanation of our failure to bring environment and language into causal relation, but a metaphor may help us to grasp it. Two men start on a journey on condition that each shift for himself, depending on his own resources, yet traveling in the same general direction. For a considerable time the two men, both as yet unwearied, will keep pretty well together. In course of time, however, the varying degrees of physical strength, resourcefulness, ability to orient oneself, and many other factors, will begin to manifest themselves. The actual course traveled by each in reference to the other and to the course originally planned will diverge more and more, while the absolute distance between the two will also tend to become greater and greater. And so with many sets of historic sequences which, at one time causally associated, tend in course of time to diverge.

GEOLOGICAL SURVEY OF CANADA
OTTAWA

THE TEWA INDIAN GAME OF "CAÑUTE"

By JOHN P. HARRINGTON

Introduction

IT is a peculiar feature of the study of prehistoric remains in southwestern United States that archeology and ethnology must proceed hand in hand. The archeologist is here forced to become an ethnologist, and *vice versa*. Almost everything of archeological interest that has been found in this area can be explained and interpreted by the Pueblo Indian of the present day. To illustrate this fact we need only mention an incident that occurred last summer during the excavation of the Chuoñi pueblo ruin, in the Rito de los Frijoles, west of Santa Fé, New Mexico, conducted by the School of American Archæology. Two peculiar stone balls, each about four inches in diameter, were discovered. None of the archeologists present could explain their usage. Two of the Indian workmen, however, upon seeing the stones, said with a grin, "*k'u'mbɛwɛ'ɛ'k'u'*", 'round stone game stones', and straightway began playing a most interesting ancient game. Such close connection between the modern and ancient cultures of this region increases the value of both archeological and ethnological studies.

Indeed, so important from the archeologist's standpoint is the immediate investigation of the strange Indian peoples still inhabiting the Southwest that one is tempted here to "take his archeology alive," as Mr Charles F. Lummis says. Protect the ruins and let them slumber on; and until there are more workers in this field let us devote our energies largely to studying the life and language of the surviving Indians, whose ancient culture is rapidly being destroyed by schools, missionaries, whisky, and general contact with the whites. The archeology can wait, the ethnology can not.

Objects used in games have been found in many of the ruins of the Southwest. We need only instance the stone balls referred to above, or the game-sticks found in one of the ruins near the

Hopi villages and described by Fewkes.[1] Of the modern Pueblo game described in the following pages archeologists have thus far found no trace, but we have considered it worth studying nevertheless, so that we shall be able to explain it when it is discovered in the ruins, as it probably will be. The graphic symbolism connected with this game will also be of importance to investigators in connection with Pueblo pictographs, pottery designs, and the like, ancient and modern.

Mr Stewart Culin, in his *Games of the North American Indians*,[2] devotes pages 335 to 382 to a discussion of what he terms the "hidden ball game," which occurs in varying forms among many of the American tribes. Mr Culin classifies the Tewa "cañute", which we describe in this paper, as a variety of this hidden ball game.

We have rather elaborate accounts of this Pueblo game as played at Zuñi, where it has been observed and described by Mr Cushing[3] and by Mrs Stevenson[4] as a game sacred to the War Gods, the playing of which in one of the plazas of Zuñi constituted in olden days one of the most important ceremonial features of February and March. Although this elaborate form of the game played at Zuñi differs in important details from the simple Tewa game that we are about to describe, there can be no doubt that the two are genetically the same. The present simplicity and lack of religious signification in the Tewa game may be due to Mexican acculturation of the villagers who play it, or it may be that the Tewa game has always been deficient in ritualistic associations. The Tewa game has been studied by the present writer at one of the Tewa villages only, at San Ildefonso (*P'c·qwc·gè*), which is situated at the confluence of Pojoaque creek with the Rio Grande, twenty miles northwest of Santa Fé, New Mexico. The same game as played at the neighboring Tewa village of Santa Clara (*K'a·p'c·*),

[1] J. W. Fewkes, Two Summers' Work in Pueblo Ruins, *22d Ann. Rep. B. A. E.*, pp. 100–101.

[2] Stewart Culin, Games of the North American Indians, *24th Ann. Rep. B. A. E.*, Washington, 1907.

[3] Ibid., pp. 374–381.

[4] Ibid., pp. 381–382, and M. C. Stevenson, The Zuñi Indians, *23d Ann. Rep. B. A. E.*, pp. 333–341.

has been outlined by Mr Thomas S. Dozier,[1] but many details, including the wonderful figures made by the players by variously arranging the game-sticks, have not previously been described. The student is continually surprised at the wealth and intricacy of institutions discoverable among the Pueblo Indians. No fewer than fifty-nine figures made by the San Ildefonseños while playing "cañute" have been photographed and otherwise recorded, and the study of these figures may throw some light on Pueblo designs and on designs and symbolization in general.

Thanks are due to the School of American Archæology and the Bureau of American Ethnology, Miss Frances Densmore, Dr H. J. Spinden, Dr P. E. Goddard, Mr K. M. Chapman, Mr J. C. Nusbaum, and the Indians for help received in various ways.

Phonetics

It is necessary to preface the description of the game with a key to the Tewa sounds and the symbols adopted to represent them. Positionally there are seven classes of phonems in Tewa.

1. Orinasal vowels, pronounced with mouth and nose passages open: *ą* (Eng. f*a*ther, but orinasal), *ą̈* (Eng. m*a*n, but orinasal), *ɐ* (mod. Greek ε, but orinasal), *į* (Portuguese s*im*), *ą̂* (French p*as*, but orinasal), *ǫ* (Portuguese t*om*), *ų* (Portuguese at*um*).

2. Oral vowels, pronounced with mouth passage open and nose passage closed by the velum: *a* (Eng. f*a*ther), *ɐ* (mod. Greek ε), *i* (Eng. rout*i*ne), *ɔ* (mod. Greek ω), *u* (Eng. r*u*le).

An inverted period after a vowel symbol indicates that the vowel is long. A superior vowel symbol indicates that the vowel is very short and grating (*knarrstimmig*). The vowels are breathy, and unless followed by the glottal stop, a glottalized stop, or a voiced sound, an aspiration is distinctly heard toward the end.

3. Semi-vowels: *j* (Ger. *j*a, but very fricative), *w* (Eng. *w*ay).

4. Laryngeal consonants: *h* (laryngeal *h*), ' (glottal stop, lēnis).

5. Dorsal consonants: *k* (voiceless lēnis), *kw* (voiceless lēnis labialized, Latin *qu*is), *k'* (glottalized), *kʿ* (aspirated), *ŋg* (Eng. fi*ng*er, voiced inflative *g* preplosively nasal), *g* (Castilian abogado), *gw* (Castilian *gu*ez), *ŋ* (Eng. so*ng*), *ŋw* (Eng. La*ngw*orthy).

[1] Stewart Culin, op. cit., pp. 368–369.

6. Frontal consonants: *ñ* (Castilian ma*ñ*ana), *ɬ* (voiceless lēnis), *ɬ'* (glottalized), *ɬ'* (aspirated), *nd* (Eng. la*nd*ing, inflative *d* preplosively nasal), *ɻ* (Japanese *r*oku), *ts* (Ger. zehn, but very lēnis), *ts'* (Ger. *z*, glottalized), *s* (Eng. *s*aw), *tʃ* (Eng. *ch*ew but lēnis), *tʃ'* (Eng. *ch*ew, glottalized), *ʃ* (Eng. *sh*ip), *n* (Eng. *n*ow).

7. Labial consonants: *p* (voiceless lēnis), *p'* (glottalized), *p'* (aspirated), *mb* (Eng. la*mb*ent, voiced inflative *b* preplosively nasal), *b* (Castilian ca*b*allo), *m* (Eng. *m*an).

The sound of *l* is heard in some words of foreign origin, and in San Ildefonso *pclamimi*, 'butterfly'.

The consonants may also be classified as follows:

Voiced constringents: *j*, *w*.

Voiceless fricatives: *h*, *s*, *ʃ*.

Voiceless fricatives labialized: *qw*.

Voiceless lēnis sonoplosive stops, labialized: *kw*.

Voiceless glottalized stops: *k'*, *t'*, *p'*.

Voiceless lēnis affricative stops: *ts*, *tʃ*.

Voiceless glottalized affricative stops: *ts'*, *tʃ'*.

Voiceless aspirate stops: *k'*, *t'*, *p'*.

Voiced inflative stops, preplosively nasal: *ŋg*, *nd*, *mb*.

Voiced lĕvis stops: *g*, *ɻ*, *b*.

Voiced nasals: *ŋ*, *ñ*, *n*, *m*.

The following phonems are consonant diphthongs: *qw*, *kw*, *ts*, *ts'*, *tʃ*, *tʃ'*, *ŋg*, *nd*, and *mb*. In the glottalized stops (*k'*, *t'*, *ts'*, *tʃ'*, *p'*) the glottal plosion follows the oral plosion, even following the glided or sukūned *s* and *ʃ* of the consonantal diphthongs. That is, the *k*, *t*, *ts*, *tʃ*, or *p* is completely "immersed" in a glottal stop. It has been determined that, at least in many instances, *ŋg* and *g*, *nd* and *ɻ*, *mb* and *b* are respectively but two aspects of the same phonem, as is the case with Castilian *g* and lĕvis *g*, *d* and lĕvis *d*, *b* and lĕvis *b*. The consonants occur probably in one length only. They may be more or less orinasal when contiguous to orinasal vowels. The sonancy of the voiceless lēnis stops appears to begin nearly simultaneously with the explosion if a voiced sound follows.

A grave accent is placed over the vowel of a syllable weakly stressed. Strongly stressed syllables are unmarked. The intonation of the syllables is not indicated in this paper.

The Name of the Game

The Tewa name for the game is *katc'ɛ̇p'ɛ'ɛ̇*. The Tewa word meaning 'game played' is *'ɛ̇*, and *'ɛ̇p'ɛ* means 'game-stick' or 'game-sticks.' The verb meaning 'to conceal' is *katc*. *Katc'ɛ̇p'ɛ* means literally 'conceal-game-stick,' and *katc'ɛ̇p'ɛ'ɛ̇* means 'conceal-game-stick-game,' referring to the four hollow sticks that constitute the principal paraphernalia of the game. The game is called in Spanish *cañute*, a word connected with *caña*, 'cane', 'reed', *caño*, 'tube', and *cañuto*, 'internode of a cane or reed'. The Tewa pronunciation of Spanish *cañute* is *kąñųtɛ̀*. A player of the game is called in Tewa *katc'ɛ̇p'ɛ'ɛ̇sɛ̨̇ŋ*, plural *katc'ɛ̇p'ɛ'ɛ̇sɛ̨̇ŋnąŋ̇*, *sɛ̨̇ŋ* meaning 'man'; and in Spanish *cañutero*, Tewa pronunciation *kąñųtɛ́ɬù*.[1]

The Sticks

The game is played with four cylindrical, hollow sticks, which might also be called tubes or cups (see fig. 21). The Tewa name for them is *p'ɛ*, 'sticks,' and therefore we call them sticks in this paper. These sticks are at present made of soft wood, usually of pine (*ŋwą̈ˑŋ*) or valley cottonwood (*tɛ̇*). One set of sticks found in use at San Ildefonso was made from an old spade handle; another was made from an old window curtain roller. No sticks made of cane or reed could be discovered by the writer at San Ildefonso. No suitable cane or reed grows near the village. But the Indians state that in earlier times sets of the sticks were made exclusively of a kind of cane called in Tewa *pɛ̇* or *pɛ̇su* and in Spanish *carrizo*, probably *Phragmites phragmites*, which then grew along the Rio Grande by San Ildefonso. They state that, since the Mexicans came, valley cottonwood (*tɛ̇*, *Populus wislizeni*), aspen (*nąnąˆ*, *Populus tremuloides*), and other kinds of wood have been employed

[1] The frequent use of the name *cañute* even by the Indians has led Mr Dozier to the entirely unwarranted conclusion that the game is not Tewa in origin. He writes (Culin, op. cit., p. 369): "This is undoubtedly an Indian game, though it cannot have originated among the Tewan pueblos [!]. It is known among them as *cañute*, a name certainly coming from the Spanish *caña*, reed. This same name obtains among the Utes and Apaches, tribes closely associated with the Pueblos."

for making the game-sticks. Sticks of cane are still used at Jemez (see the reed sticks in fig. 21).

The length of the sticks varies from four inches to a foot or more, the diameter from a quarter of an inch to two inches or more. The pine sticks obtained at San Ildefonso which are shown in fig. 21 measure as follows: length, 8¼″; diameter, 1⅜″; diameter of holes,

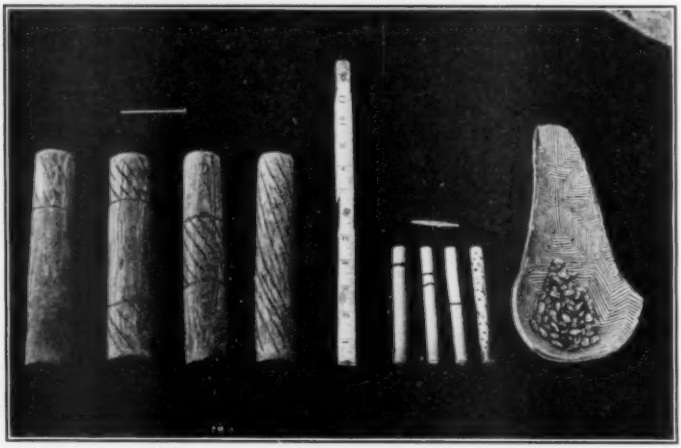


FIG. 21.—San Ildefonso cañute sticks at right, Jemez cañute sticks at left. Pins above sticks. Beans used as counters at extreme right.

½″; depth of holes, 6½″, width of bandings, 2¾″. The reed sticks from Jemez shown in the same figure measure 4½″ in length and ⅜″ in diameter.

The cane sticks were shaped with knives or similar tools. The holes in the wooden sticks are now burned by means of a hot iron, sometimes a spike, which is held by being inserted into or bound to a piece of wood. The holes are usually of irregular surface and the pin that is hidden in them may get stuck in them, which vexes the players and sometimes even spoils the game.

The exterior surface of both the cane and the wooden sticks is always ornamented with certain markings, which are and were

burnt, now by means of a hot iron, usually a piece of wire or a branding iron, or something of sharper edge than the spike that is used in burning out the holes of the wooden sticks. Formerly, they think, the designs were either burnt with a heated stone of some sort, or else they were scratched and pigment rubbed in.

The sticks are distinguished by these exterior markings as follows. Reference should be had to the accompanying photographic halftone of two sets of the sticks (fig. 21).

1. *Wi'ɨɳ(p'ɛ)*, 'the "one" (stick)' (*wi*, one, numeral noun; *'ɨɳ*, connective particle, vegetal gender, singular number; *p'ɛ*, stick); rarely called also *wi'iwɛ'ɨɳ(p'ɛ)*, 'the (stick) (banded) at one place' (*wi*, one, numeral noun; *'iwɛ*, locative postfix; *'ɨɳ*, connective particle as above; *p'ɛ*, stick). This stick is called in Spanish "*el uno*". This stick is always banded at one end of its lateral surface, usually at the end at which the hole opens. Across the end at which the hole does not open there usually runs a single straight line. Mr Dozier's "*wĕpĭ'*"[1] is entirely wrong. He means, of course, *wɛpi*, 'one,' numeral noun of vegetal gender. The expression *wɛpi p'ɛ* would mean 'one stick', not 'the "one" stick'.

2. *Wijɛ'ɨɳ(p'ɛ)*, 'the "two" (stick)' (*wijɛ*, two, numeral noun; *'ɨɳ*, connective particle, vegetal gender, singular number; *p'ɛ*, 'stick'); rarely called also *wigɛ'ɨɳ(p'ɛ)*, 'the (stick) (banded) at two places' (*wigɛ*, at two places, locative form of the numeral noun *wijɛ*, two; *'ɨɳ*, connective particle, as above; *p'ɛ*, stick). This stick is called in Spanish "*el dos*", often in Tewa pronunciation *'ɛ ndc*. This stick is always banded at both ends of its lateral surface. Across the end at which the hole does not open there usually run two parallel straight lines. Mr Dozier's "*wĕ'-gɣ'*"[1] is meant for *wigɛ'ɨɳ*.

3. *Ti'ɨɳ(p'ɛ)*, 'the swollen (stick)' (*ti*, swollen; *'ɨɳ*, connective particle, vegetal gender, singular number; *p'ɛ*, stick). This stick is called in Spanish "*el hinchado*", in Tewa pronunciation *'ɨtʃaù*. *Hinchado* is the past participle, masculine-neuter gender, of the verb *hinchar*, 'to swell'. The idea present in the minds of the

[1] Stewart Culin, op. cit., p. 369.

Indians who call it thus is that the stick is swollen in the middle because it is banded in the middle. The banding in the middle, especially when it consists of diagonal stripings, produces a swollen effect. The stick looks larger in the middle than it does at the ends, just as the "two" stick looks larger at the ends than it does in the middle. The Indians explain the term thus. This stick is always banded about the middle of its lateral surface. Across the end at which the hole does not open there usually run three parallel straight lines. Mr Dozier gives as the Spanish name of this stick "*cinchado*, girtled",[1] and Dr Martin gives as the Spanish designation of the stick current among the Taos Indians "*cinchow* (colloquial for *cinchado*), girthed".[2] Although Spanish *cinchado* 'girthed', past participle, masculine and neuter gender, of *cinchar*, 'to girth', in Tewa pronunciation *sɨtʃaù*, seems a more natural designation for this stick than *hinchado*, swollen, the San Ildefonso Indians agree that *ti'ɨŋ, hinchado, is the only name current at their village*. The form *hinchado* may at some time in the past have become applied, by a misunderstanding, instead of *cinchado*; and of *hinchado* the Tewa name *ti'ɨŋ* may be merely a translation. It seems less probable that *ti'ɨŋ* is the ancient Tewa name of which *hinchado* is a translation.

4. *Mulàsɛ̨ˑŋndc(pʻɛ)* or *muʌasɛ̨ˑŋndc(pʻɛ)*, 'old mule (stick)' (*mulà* or *muʌà*, she-mule < Spanish *mula; sɛ̨ˑndc*, old man, age-sex noun; *pʻɛ*, stick). This stick is called in Spanish "*el mulato*", 'the tawny', 'the mulatto', in Tewa pronunciation *muʌatù*, much as we might call it "the mulatto" or "the nigger" in English, because the entire lateral surface is dark or tawny with decoration. Spanish *mulato, mulata*, are derivative forms of *mulo, mula*, Latin *mūlus, mūla*, meaning male and female mule respectively. A mulatto (< Spanish *mulato*) was so called in Spanish because like a mule he is the offspring of very unlike parents. The Tewa Indian, not being acquainted with that variety of human being called mulatto, very naturally understood the word in its more original signification as applied to a mule, and rendered it in his

[1] Stewart Culin, op. cit., p. 369. Girtled or girdled?

[2] Ibid., p. 370.

language as *mu⁴àsɛ̨ˑηndc*, to translate the derogatory sense expressed in Spanish by the ending *-ato, -ata*, just as we might add "old" in English. Now *mulato*, as the name of a cañute stick, is in Spanish masculine and neuter, like the names of the other sticks and like the word *cañute* itself. But in Tewa while the form *mulà* or *mu⁴à* is applied to a female mule as in Spanish, its masculine counterpart, *mulo*, does not exist, Spanish *macho*, in Tewa pronunciation *matʃù*, having been adopted for the male mule. So when the Tewa Indian heard *mulato*, the first part of the word sounded to him feminine, the second part masculine, and he gave this peculiar hybrid idea expression in his own language when he translated the word with *mu⁴àsɛ̨ˑηdc*. The entire lateral surface of this stick is always entirely covered with ornamentation, whence the name as explained above. Across the end at which the hole does not open there usually run four parallel straight lines. Mr Dozier gives as the name of this stick "*sĕn-dō'*, Spanish *viejo*, old"[1] ("*sĕn-dō'*" for *sɛ̨ˑηndc*), while Dr Martin gives as the Spanish name for the stick current at Taos "*mulata*, tawny",[1] writing incorrectly the feminine form "*mulata*" as he does "*una*" instead of "*el uno*" for the "one" stick.

The *ti'i̯η* stick is never called *pcjè'i̯η*, 'the "three" stick', nor is the *mulàsɛ̨ˑηndc* stick ever called *jcnù i̯η*, the "four" stick, although the lines across the ends might seem a reason for such a naming.

Although the disposition of the decoration of the sticks has been the same in the case of every set observed at San Ildefonso, there is considerable variation in the details of pattern. The commonest pattern consists of diagonal equidistant parallel lines as on a twisted stick of striped candy (see fig. 21). A checkered pattern composed of two intersecting series of such lines is also common. An upright checkerboard pattern also occurs; so also more complicated systems of linings and dottings. Dots or x's, the latter representing the footprints of the roadrunner, may occur sprinkled over any of the patterns. All the sticks of a set may not

[1] Stewart Culin, op. cit., p. 370.

in every case rigidly adhere to the same decorative pattern. The *ti'i̧η* stick may bear an x at its end instead of the three parallel bars. The *mulàsɛ̨'ηndc* stick occasionally has at its end a figure consisting of two parallel lines intersecting two other parallel lines at right angles (the "sharp" of our musical notation), or a figure consisting of three straight lines intersecting at the central point. The simple ornamentation shown in fig. 21 seems to be commonest.

Mr Dozier states[1] that the stick known in Spanish as *cinchado* (see under *ti'i̧η*[*p'ɛ*] above) is called in Tewa "*pin-do-ĕ*" or "*pin-do-tsī-kī*". It is not called thus at San Ildefonso, at least. *P̨índù* is the Tewa pronunciation of New Mexican Spanish *pinto*, 'spotted'. At Jemez the stick corresponding to the San Ildefonso *mulàsɛ'ηndc* stick is dotted all over and may be called in New Mexican Spanish *pinto*. See below. But the San Ildefonso Tewa never dot any of the sticks all over and never call any of them *pinto* or *p̨índù*. "*Pin-do-ĕ*" could not be understood by the writer's informants; the last syllable appears to be the diminutive element, but this is not post-joined to adjectives. *P'ɛ tsi̧ki'i̧η* would mean 'a stick notched around or made slender at some one portion of it,' the conception being exactly the opposite of *p'ɛ ti'i̧η*, 'a stick with some one portion of it bigger or bulging'. The writer's informants stated that although a Tewa not familiar with the terminology of the game might call the girthed stick *tsi̧ki'i̧η* (for which Mr Dozier's "*tsī-kī*" is clearly meant), it is not customarily applied to this stick.

The markings and names of the sticks do not signify different values. In fact, they have nothing to do with the playing of the game. They are merely designations convenient in referring to separate sticks. Thus one will hear during the course of a game such expressions as these: "You will find it in the old mule now certainly"—"No, this time I am going straight for the 'one' stick."

The little stick that is hidden is only an inch or two in length. To distinguish it from the other sticks, which, as stated above, are known as *p'ɛ*, this is called *p'ɛ'ɛ'*, 'little stick', *'ɛ'* being the diminutive-forming element in Tewa. This small stick will in this paper

[1] Stewart Culin, op. cit., p. 369.

be spoken of as the "pin", for want of better terminology. The pin may be of wood, bone, or metal; most frequently it is an iron nail. It must be sufficiently heavy to fall out of the holes in the sticks readily and of such size as not to become stuck in the oftentimes rough-surfaced and crooked cavities. The writer has never seen the pin ornamented in any way. Mr Dozier describes a pin from Santa Clara as being painted with bands of several different colors.[1]

The sticks are not always the property of those playing. They usually belong to the person or persons who made them. Some very ancient sets can be obtained at the village. The set shown in fig. 21 is very old. The sticks may be kept almost anywhere in an Indian's house.

How the Game is Played

Katc'ɛ'p'ɛ'ɛ' is played by males only. The game is played for the most part in winter, when the Indians have little else to do, although they have no objections to playing it in the summer time. At the Tewa pueblo of San Juan it is invariably played on All Saints' eve (the eve of the first of November), when it forms the chief amusement and means of celebration. This year it was played only once at San Ildefonso previous to Christmas. It is played most in January, February, and March. At present it is more likely to be played on Saturday nights or Sundays than at other times.

The game is frequently played continuously for hours. In ancient times, it is said, the gaming often lasted an evening and a day. It is usually played outside the house, frequently on the porch with which, due to Mexican influence, the Indian house is regularly provided; but sometimes inside, especially in cold weather. It is played in the day time, or at night. As far as the writer can judge, Mr Dozier is wrong when he says: "Cañute . . . is played *usually* at night within doors."[2]

Immediately before commencing the game two piles of loose (usually dry) sand or dirt are formed, one as the center for each party of contesting players. These piles are called *nq̊'ŋmbc'ɬ̨*,

[1] Stewart Culin, op. cit., p. 368.

[2] Ibid., p. 369. The italics are the present writer's.

rounded dirt (*nq̂·η*, earth; *mbc·ɬ̀*, rounded). They may vary in height from six inches to over two feet; they become much flattened before the end of the game. The size of the piles usually varies directly as the size of the sticks. When in the open, these piles are twenty-five to a hundred or more feet apart. When on the porch or indoors they are as far apart as space permits.

As counters for keeping account of the winnings made in the course of a game, kernels of corn (*k'μ·ηk'ɛ·*), beans (*tu·*), or other seeds (*tq̂η*) may be used. There is no general word for 'counters'. The number of counters is frequently fifty, one hundred, one hundred and four, one hundred and fifty, or two hundred. The greater the number of counters, the longer the game is supposed to be likely to last. A small number of counters is used if it is desired that the game be short. The counters, whatever number may be decided upon, are deposited before the game begins in a common pool called "*el troje*" in Spanish, *'ɛ nduhè* in Tewa pronunciation, meaning the 'granary' or 'mow'. The Tewa in their own language speak of it as *k'μ·ηk'ɛ·mbc·ɬ̀*, 'pile of corn kernels', etc., as the case may be. Sometimes the counters are merely laid on the ground or on some object present by chance. Or they may be placed in a cup, spoon, or other vessel of Indian or white man's make (see fig. 21).

In the more important games two men act as "cashiers" (*nda'q̂ñiηgi'q̂*, 'they two watch or guard') for their respective sides, paying the forfeits incurred by their respective sides out of the common pool under the closest scrutiny of all concerned. Two additional receptacles may be employed to hold the counters earned in the process of the game by the opposing sides, but the accumulations of counters are commonly placed on the ground or on some object that chance presents.

There are invariably two sides or parties. There may be only one player on each side or there may be as many as ten or more.

The game is regularly accompanied by betting, and Mexican players have the reputation of being heavier betters than the Indians. The stakes are usually made when the piles of dirt, sticks, and counters have been made ready, but before the game

actually begins. One side bets perhaps fifty cents; the opposing side, an old pocketknife. As much as five dollars is occasionally staked by each side. In earlier times betting values were largely computed with deerskin as the standard. The stakes are placed in the keeping of some person agreed upon by both sides, usually one of the onlookers, and are given to the players of the winning side at the close of the game.

To determine the deal in opening the game both sides retire to

FIG. 22.—Determining the deal—Picking up the first stick.

their respective dirt-piles. A disinterested person builds a small pile of dirt between the two other piles and sticks into it two of the game-sticks, so arranged that the closed ends of the sticks project from the pile, the pin having previously been secreted in one of the two sticks. One of the two sides then comes over and guesses in which of the two sticks the pin is situated. See fig. 22, which shows a player in the act of picking up one of the two sticks, thus determining the deal. If the first stick guessed contains the pin, the guesser's side has the deal. The sticks are taken to the vicinity

of the dirt-pile of the guesser's side, where one of the players secretly inserts the pin in one of the sticks and then places all four of them on the pile so as to form one of the figures described below. If, however, the first guess were wrong the other side would have the first deal. There are no leaders. One, or several, players now come over from the opposing side, while the side possessing the sticks perhaps sings the taunting song given below or tries in some other way to disconcert the guessers so that they will be defeated in their object. The guesser lifts up the sticks one after another, endeavoring to select as his third choice the stick that contains the pin. The object is to find the pin in the third stick guessed. If the guesser does not find it in the third stick guessed, he loses and has to pay a forfeit to the side possessing the sticks. If the guesser finds the pin in the first stick guessed, his side has to pay the opposing side ten counters out of the common pool. If he finds it in the second stick guessed, his side must forfeit six counters. If he finds the pin in the fourth stick guessed, his side must forfeit four counters. But if he finds the pin in the third stick guessed, the sticks become the property of his side and he returns to his own side with the sticks, which remain with his side until they are won from them by the opposing side, which now is the guessing side. Thus the dealing side wins all the time unless the guessers find the pin at their third guess.

The forfeits of counters are paid out of the pool until that is exhausted. If there be after a certain unsuccessful guess fewer counters remaining in the common pool than ought to be paid, only the number of counters remaining in the pool is paid. But in the case of all successive unsuccessful guesses, the forfeits are directly paid out of the pool of the losing side. At last one side or the other gains all of the counters, thus winning the game.

When there are two or more partners on either or both sides, these usually assist each other mutually in arranging the sticks and guessing. Individuals on the same side do not systematically take turns as we should expect.

One must remain by the pile of his own side while the pin is being inserted by parties of the opposing side. This rule is strictly enforced.

The players of the side successfully guessing, having obtained and for some time retained the sticks, are thought to have power (*pinąη*). According to the conception of the Indians, the sticks pass from one side to the other according to the power to divine the pin in the third stick chosen. It is stated that certain men are born guessers. Such men are said to be successful every time. The good guesser does not hesitate long. "His heart tells him which stick it (i. e., the pin) is in."

The good guesser, however, himself admits that he can sometimes tell in which stick the pin lies by watching the eyes and actions of the person who hid the pin, for the person who hid the pin, usually, but not always, knows which stick the peg is in. Sometimes the placer knows but forgets. The guesser may ask the placer if the pin is in this or that stick, looking him in the face. In order to avoid such eye reading or mind reading, if you will, the person who placed the pin is taken by the hand by another person of his own side and is led away and made to stand with his back to the players, lest he unwittingly betray the location of the pin.

As the game is played at San Ildefonso at present the man placing the pin usually stands so that all the players are in front of him, holds all four of the sticks and the pin behind his back, using both hands, places the pin in one of them, and then shuffles the sticks, not looking at them all the while. Rarely the placer turns his back to the players and secretly and knowingly inserts the pin. Men who do thus are likely to be untrustworthy; to read the eyes of some bad men is misleading. In olden days when the wearing of blankets was commoner than now the placer sometimes covered himself up in a blanket and while thus concealed inserted the peg and shuffled the sticks. While the sticks are being placed, it must be remembered, the men on the side of the placer are usually singing the song to disconcert the side of the guesser. Very rarely the pin is inserted in plain view of all on the placer's side. But the "best way" is to hold all four sticks with holes upward in one hand behind the back. The peg is then held over them and dropped or thrown in with the other hand. Yet even when such care is taken, one often discovers the whereabouts of the peg when arranging the sticks on the dirt-pile.

There is much that savors of true divination in connection with locating the peg.

1. It is a common practice that two good guessers march forward. One hastens toward the pile, saying "It is not in this stick." He moves the stick from its place with his hand or foot. True, the peg is not contained in it. "And it is not in this one either," says the second good guesser. It is not there. The first good guesser now has a chance to test his skill. He has to determine in which of the two remaining sticks the pin is to be found. After only a moment's

FIG. 23.—Determining by divination which stick contains the pin.

deliberation he tosses one of them aside, saying "It is not in this either," and disdaining to examine the one in which the stick is to be found he gathers them up, pin and all, and returns triumphant to his own side.

2. It frequently happens that the guesser comes and takes up one of the sticks. If this does not contain the pin, he grasps it in his hand and with it gives another of the sticks a sharp knock. This is a sign that he believes the second stick does not contain the pin. If the pin still has not been found, he uses this or the first

stick in rapping a third stick—a sign that he believes that the stick which he thus raps does not contain the pin.

This sharp striking of the sticks is said to show ability to find the pin quickly. The guesser speaks to the sticks—calls them his sticks.

3. The feat of divination next to be described is said never to fail "if one knows how." The guesser approaches the pile and seizes one stick, and in finding it not to contain the pin, uses it in rapping a second stick, as was described above. Two sticks

FIG. 24.—Tapping the stick which, according to the divination, does not contain the pin.

remain. Taking one of the lifted sticks he sets it on its end near enough to the remaining undisturbed sticks that its top can fall and hit one or the other of them (see fig. 23). The stick thus divined is supposed to contain the pin. The other stick is first sharply struck by a stick grasped in the hand, just as the second stick lifted was struck (see fig. 24), then raised, and laid aside. By such process of divination and elimination the right stick is said always to be guessable in the right order.

The divination by letting one of the sticks fall is accordingly

practised before the third guess, which is considered the most important one. Some players regularly follow this practice. On one occasion, when the divining stick fell on the wrong one of the two sticks, the Indian was heard to exclaim impatiently to the divining stick, "You lied!"

If in divining a stick falls away from the pile so as to indicate nothing, the guesser picks it up and tries again.

4. The guesser may come and pick up one stick and with it quickly tap any two others. The order in which he taps is not important if he holds his other hand in a definite position while he taps them. That one of the two sticks tapped which lies nearest his other hand counts as second, and the other one as third.

5. The guesser may approach and tap one of the sticks with his finger or fingers. This is a sign that this one will be his third choice. He then proceeds carefully to eliminate the others, the one which he tapped first being the third stick lifted.

The idea behind the action of striking the sticks sharply is that it makes them obey the guesser and shows that the guesser is smart.

The song of *jɥ'η*, the Western mocking bird (*Mimis polyglottos leucopterus* Vigors), while one is guessing, is supposed to assist the divination in some way. This fact is from the writer's direct observation, and its naïveté startled him.

It seems to be the conception of the Indians that the sticks pass from side to side according to the power of the guessers to divine the pin in the third stick chosen.

When several play on each side, one or two individuals do most of the guessing. Perhaps a single individual will guess for his side as long as he has good luck. Then if he has no success for a time others will come forward and try their luck for the good of the side.

Only rarely is much hesitation apparent on the part of the guessers or are lengthy discussions indulged in.

The dealing side tries to confuse and thwart the guessers as much as possible. Notice was made above of the precautions taken to avoid eye-action or mind reading. The guesser is constantly addressed with such words as: "You are going to pay us ten," "'*A*, '*a*, he is going straight for the wrong one," "He will not find it in that one though."

The sticks are sometimes manipulated more or less with the feet instead of the hands.

Singing

The players on the side which has the sticks frequently sing a song while the guessing is going on, "they are so happy in the possession of the sticks." The guessers never sing; "they are sorry because they are guessing." But the chief purpose of the singing is to confuse the guessers. Although various songs may be sung while the game is in progress, there is only one real *cañute* song, known in Tewa as *katc'ɛ'p'ɛk'a'wc* (*katc*, to hide + *'ɛ'*, game; *p'ɛ*, stick; *k'a'wc*, song) or *kąñųtèk'a'wc* (*kąñųtè* < Sp. cañute; *k'a'wc*, song), and in Spanish as *la cancion de cañute*. A tambourine drum is sometimes used to accompany the song. The large cottonwood dance-drum is never thus used.

The cañute song was completely recorded by means of a phonograph and the record was transcribed into musical notation by Miss Frances Densmore.

The song has been analyzed by Miss Densmore as follows:

"Two renditions of this song were recorded by Mr Harrington, the transcription being made from the first rendition. In beginning the second, after a pause, the singer apparently had difficulty in finding the proper pitch for the song. The second rendition opens with the same rhythm and general trend of melody but with a pitch which is vague and wandering. This continues as far as the measure marked X, which is found to be accurate in intervals and on the same pitch as the corresponding measure in the first rendition. Beyond this measure the correct pitch is maintained throughout the song. There is a slight difference of rhythm in the rapidly enunciated words of the middle portion, and the last four measures are omitted in the second rendition.

"On examining the transcription we note that the melody tones, exclusive of the embellishments, are those of the scale which is commonly known as the minor pentatonic scale but which is called the second five-toned scale by Helmholtz in his work entitled *The Sensations of Tone as the Physiological Basis of Music* (part 3, chapter 14).

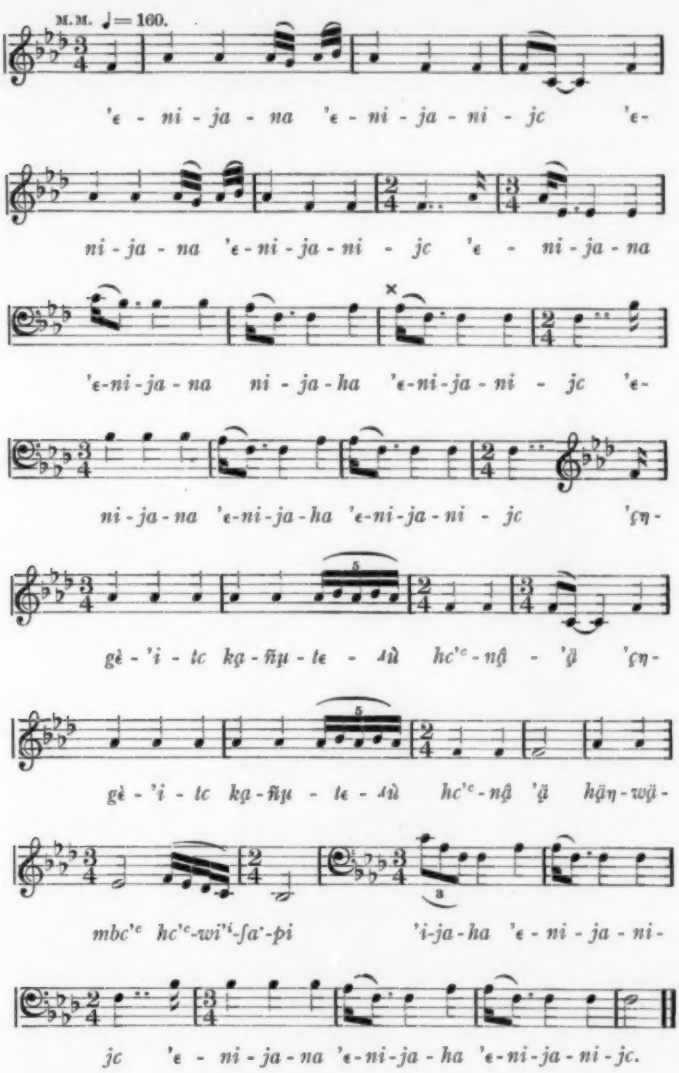
"In rhythmic outline the song is divided into four periods, the first containing six measures and the last three containing nine measures each. The first and third periods are double, and each period has a distinct rhythmic phrase; and the second and fourth periods contain a different rhythmic phrase which is short and continuously repeated. The measure lengths are clearly indicated by accented tones, and the metric unit is steadily maintained except in a few measures. The short tones of the embellishments are somewhat uncertain in pitch, but the intonation of the principal tones approaches accuracy. This is of special interest in the transition from the second to the third periods of the song, the ascending interval of an octave being correctly sung in both renditions.

"In this, as in all transcriptions of primitive songs, the musical characters should not be regarded as absolute representations of the tones produced by the native singer. It is found that in certain respects, notably the intervals of the octave and fifth and the regularity of the metric unit, the native performance parallels our standard with a reasonable degree of accuracy; no attempt is made to indicate deviations from this, as observation has shown that such deviations frequently vary with the mood of the singer.

"It is assumed that the speed of the recording phonograph was 160 revolutions to the minute, and the indicated tempo of the song was determined by playing the record on a phonograph adjusted to that speed."

Thanks are also due to Mrs I. H. Rapp, of Santa Fé, who patiently and successfully endeavored to record the song directly as sung by an Indian.

The words of the song have no known meaning with the exception of the following:

'ɕŋgɛ̀'itc	*kąñŋuteʌ̀ù*	*hc'ᵉnɑ̂'ą̈*
yonder	the cañute player (i. e., the guesser)	now he is coming
'ɕŋgɛ̀'itc	*kąñŋuteʌ̀ù*	*hc'ᵉnɑ̂'ą̈*
yonder	the cañute player (i. e., the guesser)	now he is coming
hą̈ŋwą̈mbc'ᵉ	*hc'ᵉwi'ⁱʃa·pi*	
nothing	now he will find	

M.M. ♩= 160.
'ɛ - ni - ja - na 'ɛ - ni - ja - ni - jc 'ɛ-
ni - ja - na 'ɛ-ni - ja - ni - jc 'ɛ - ni - ja - na
'ɛ-ni - ja - na ni - ja - ha 'ɛ-ni - ja - ni - jc 'ɛ-
ni - ja - na 'ɛ-ni - ja - ha 'ɛ-ni - ja - ni - jc 'ɛŋ-
gɛ̀ - 'i - tc kɑ - ñɲ - tɛ - ɻù hc'ᵉ - nɑ̂ - 'ɑ̰ 'ɛŋ-
gɛ̀ - 'i - tc kɑ - ñɲ - tɛ - ɻù hc'ᵉ - nɑ̂ 'ɑ̰ hɑ̃ŋ - wɑ̰ -
mbc'ᵉ hc'ᵉ - wi'ⁱ - ʃa' - pi 'i - ja - ha 'ɛ - ni - ja - ni -
jc 'ɛ - ni - ja - na 'ɛ - ni - ja - ha 'ɛ - ni - ja - ni - jc.

The occurrence in the song of the Spanish word *cañutero* need cause no surprise. Spanish words and phrases occur in some of the most sacred traditional formulas pronounced by the Tewa in their secret meetings. In fact, the Tewa words translated above are frequently supplanted by the following Spanish words, melody and burden remaining the same.

alla viene el cañutero o — o
there comes the cañute player
(i. e., the guesser)
el no hall' el palito o — o
he not will find the pin
el perdió el juego
he lost the game

Cheating

The dealers may resort to more strenuous means of thwarting the guessers than by merely taking precautions, talking, or singing. A frequently occurring trick is to insert two pins, each in a different stick. The guesser is then doubly likely to find a pin in the first or second stick guessed, and the dealers arrange secretly to extract the other pin as they lift the remaining sticks from the pile. The eliminating manner of procedure in picking up the sticks described above may originally have been due to an attempt to prevent cheating.

The Arrangement of the Sticks

The figures made by the dealers by variously arranging the sticks on the dirt-pile are the most interesting feature of cañute as it is played by the Tewa. They are merely an artistic embellishment of the game. These figures are here reported and described for the first time.

It is not certain whether they are a feature of the game as it is played at other pueblos. The only reference to cañute figures which the writer can find is made by Mrs Stevenson, who says in describing the Zuñi form of the game:

"The elder God of War always placed his cups in the form of a square;"[1] and again: "He forms three points of a triangle with

[1] Stewart Culin, op. cit., p. 381.

three cups and places the extra cup to the eastern point, 'for so the younger God of War placed his game.'"[1] This indicates that at least the principle of forming the figures is known at Zuñi. However, the Jemez, Taos, and Isleta seem not to be acquainted with the figures, and it is probable that the development of cañute figure-making at San Ildefonso is anomalous.

The figures are made much in the same fashion as children graphically represent certain ideas by arranging small objects. But the forms have become traditional and the signification of

FIG. 25.—The first guess.

each is very definitely understood by the villagers. The San Ildefonso cañute figures present a symbolism so highly conventionalized and so complex that the term language might well be applied —a symbolism not essentially different in origin or practice from human speech, gesture language, African drum language, conventionalized graphic designs that have a commonly understood meaning, or writing whether executed in pictograms, ideograms, phonograms, or phonetic symbols.

The characteristic form of most of the figures is closely paralleled by designs occurring in the graphic art of the Tewa.

Fifty-nine of these figures were explained to the writer. Only a small fraction of this number are usually made in a single game. The same figure is often arranged many times in succession, even though the sides may change.

There is no definite order in which the figures are made except that certain figures are likely to suggest certain others. Thus the penis design is usually followed by that of the vagina, which is in turn followed by the big penis and horse penis. The penis and vagina figures are usually made in derision after the guessers have failed several times.

FIG. 26.—"Here the guessing man comes."

The grouping of figures presented below was made by the writer, and is not an Indian classification, as there is none. In this grouping the fifty-nine figures are classed under seven heads according to the objects they represent: Figures representing celestial objects, 13; figures representing animals of the air and their parts, 7; figures representing geographical features, 7; figures representing the

[1] Stewart Culin, op. cit., p. 382.

human form, its parts or effigy, 11; figures representing houses or their parts, 7; figures representing weapons or their parts, 7; figures representing religious objects, 7.

The principles underlying the structure of the figures would be worthy of close study. The technique of the figures is also interesting, the player being limited to the use of four straight sticks of uniform length.

As is true of most primitive symbolism, variability of form is permissible, but only within certain limits. Thus the figure representing the tablita headdress may be constructed in any one of three quite distinct forms, each of which may present minor variations. But the Chifoneti horn design, if varied ever so little in a certain way, becomes identical with one form of the cloud design. The players invariably take care to keep these two designs distinct. Again, figures representing widely different objects may be almost or quite identical. Thus the figure representing the flight of sand-hill cranes (pl. XI, fig. 3) is the same as that representing hills (pl. XII, fig. 1). A study of the written forms of the letters of our alphabet reveals similar conditions.

In the instance of some of the figures only the maker knows with certainty what he represents, and inasmuch as the names of the figures are usually not spoken, it is quite conceivable that a man might make a figure understanding that it represents the flight of sand-hill cranes, while another person present might interpret it as meaning mountains.

As regards the plane of the figures, a stick may lie on the pile, lie on the pile with one end buried in it, lie with one end on the pile and with the other end on another of the sticks, or stand on end planted in the pile. In the majority of the figures all the sticks lie more or less horizontally. In one figure only (pl. XIII, fig. 5) do sticks, representing beard hairs, lie on the pile with one end buried in it, and in one figure only (pl. XVI, fig. 1) does a stick, representing an arrow, lie on the pile with one end resting on another stick. When all the sticks stand erect either people or constellations are represented. Only three figures (pl. XI, fig. 6; pl. XII, fig. 7; pl. XIII, fig. 2) have combinations of lying and standing sticks.

The principles by which some figures are distinguished from others are interesting. Thus the sole difference between the two figures in each of the following pairs is that in one the sticks forming certain portions of the figure are contiguous; in the other, separated.

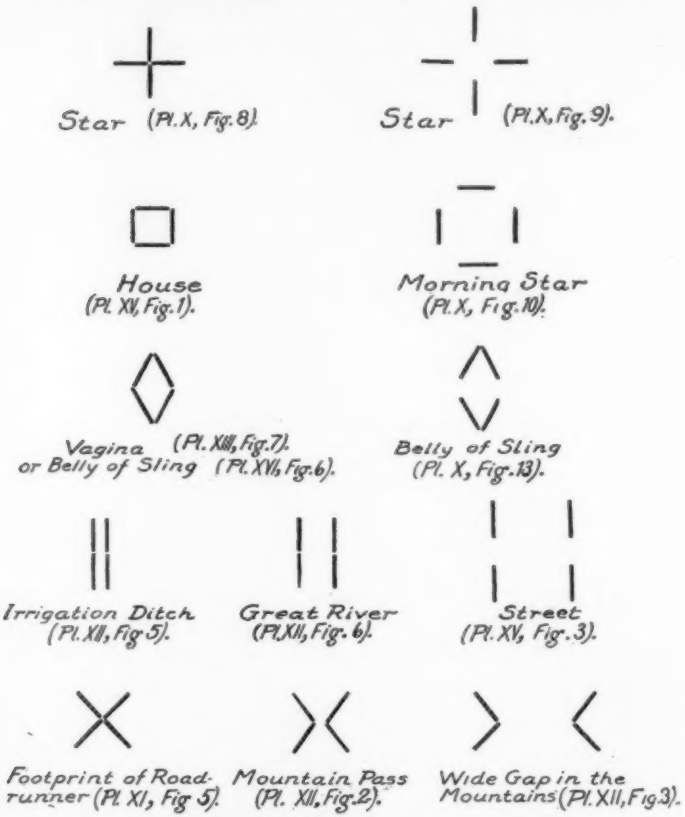
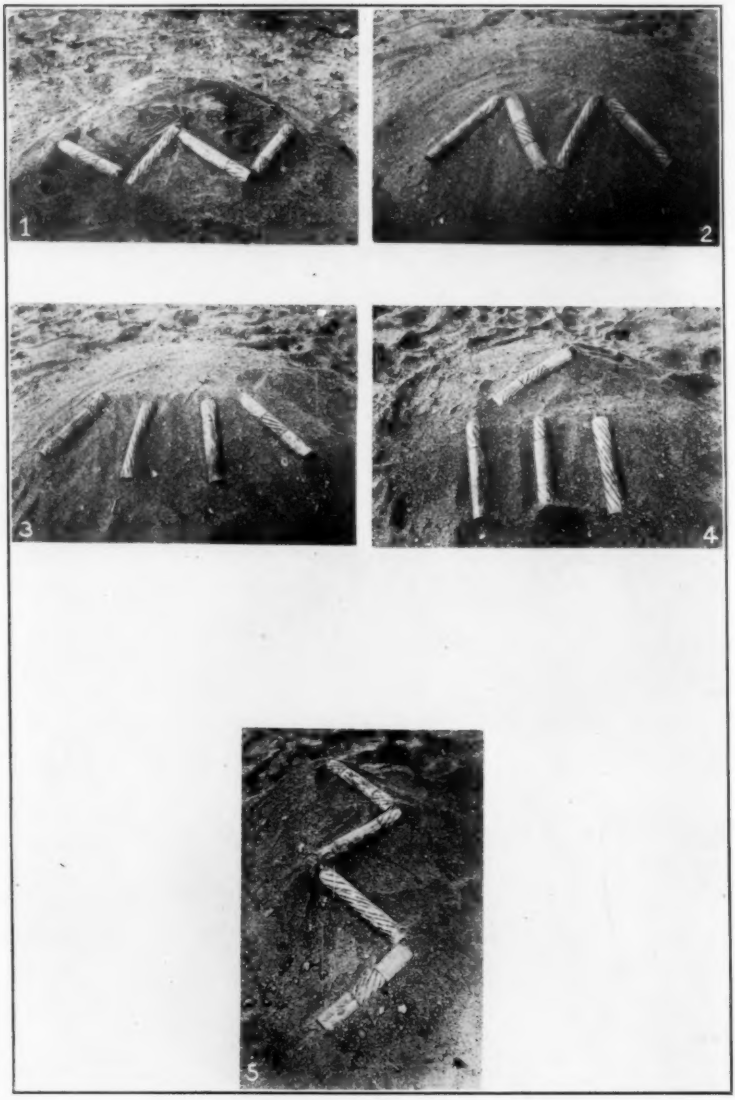

Star (Pl. X, Fig. 8).
Star (Pl. X, Fig. 9).
House (Pl. XV, Fig. 1).
Morning Star (Pl. X, Fig. 10).
Vagina (Pl. XIII, Fig. 7).
or Belly of Sling (Pl. XVI, Fig. 6).
Belly of Sling (Pl. X, Fig. 13).
Irrigation Ditch (Pl. XII, Fig. 5).
Great River (Pl. XII, Fig. 6).
Street (Pl. XV, Fig. 3).
Footprint of Road-runner (Pl. XI, Fig. 5).
Mountain Pass (Pl. XII, Fig. 2).
Wide Gap in the Mountains (Pl. XII, Fig. 3).

CHART ILLUSTRATING CONTIGUITY AND SEPARATION IN CAÑUTE GAME

The openings of the sticks are always covered with dirt. In the squarish, horizontally placed figures the openings of the sticks are always oriented toward the center of the figure. In other



FIGURES REPRESENTING CELESTIAL OBJECTS

1, 2, *'ck'uwà*, cloud. 3, 4, *kwê'*, rain. 5, *tsiguwänu*, lightning.

horizontally placed figures the openings of the sticks are always oriented in a direction opposite to that from which the guessers come. The vertically placed sticks always have their openings turned downward, and care is taken in placing them and in picking them up lest in doing so the pin drop out. Fig. 22 shows an Indian picking up a stick that is in a standing position.

The figures are commonly oriented as shown in the photographs, although almost any of them might be oriented in any other direction. Where two orientations are common these have in some cases been illustrated.

The penises and the weapons regularly point toward the guesser's side, while the sand crane and bird are regularly represented as flying away from the guesser's side.

Some figures are more realistic than others. Thus the road-runner's footprint and the turkey's foot are very realistic.

There are many arrangements of the sticks possible that have no significance. If such an arrangement is made, the Indian will say: *winą̂tɥpi*, 'it says nothing' (*wi*, negative; *nąˆ*, it; *tɥ*, to say; *pi*, negative). However, there are certain geometric terms in the language that might be used in describing such unfamiliar arrangements. Geometrical descriptive terms can be applied to any one of the figures in addition to its proper name.

The figures were photographed as actually made by the Indian players. At first drawings of the figures were attempted, but they were found to give at best an inadequate idea of the figures.

Detailed Description of the Figures

1. Figures representing celestial objects

Pl. IX, fig. 1. Tewa *'ck'uwą̀*, 'cloud'. The w-shaped arrangement reminds one of such a cloud design as is shown in the chart of designs, fig. 1 (p. 281). This figure is often not distinguishable from *k'c'są̀sɛ́η*, 'Chifoneti horns' (pl. XVII, fig. 1), except in the mind of the maker. When the Chifoneti horns figure is carefully made it is arranged as shown in pl. XVII, figs. 1 and 2. The figure representing *tsiguwą̃nu*, 'lightning' (pl. IX, fig. 5), usually differs from this figure

in orientation and in having its sticks form greater angles with each other.

Pl. IX, fig. 2. Tewa *'ck'uwà*, 'cloud'. This differs from the preceding figure only in its orientation. It differs from the usual form of *tsiguwą̈nu*, 'lightning', as does the preceding figure. It is likely to be confused with *pugaʃɻ'η*, 'flight of sand-hill cranes' (pl. XI, fig. 3), and with *'cku*, 'hills' (pl. XII, fig. 1).

Still another form of the cloud figure is identical with the form of *pugaʃɻ'η*, 'flight of sand-hill cranes', given in pl. XI, fig. 1. This resembles the cloud form shown in the chart, fig. 2.

Pl. IX, fig. 3. Tewa *kwą̂'*, 'rain'. This represents the drops descending. Compare the chart, fig. 3. This variety of *kwą̂'*, 'rain', may be confused with *teqwap'e*, 'house rafters' (pl. XV, fig. 2), or with *t'cwàɬɛjckwc*, 'the people are lying asleep' (pl. XIII, fig. 4).

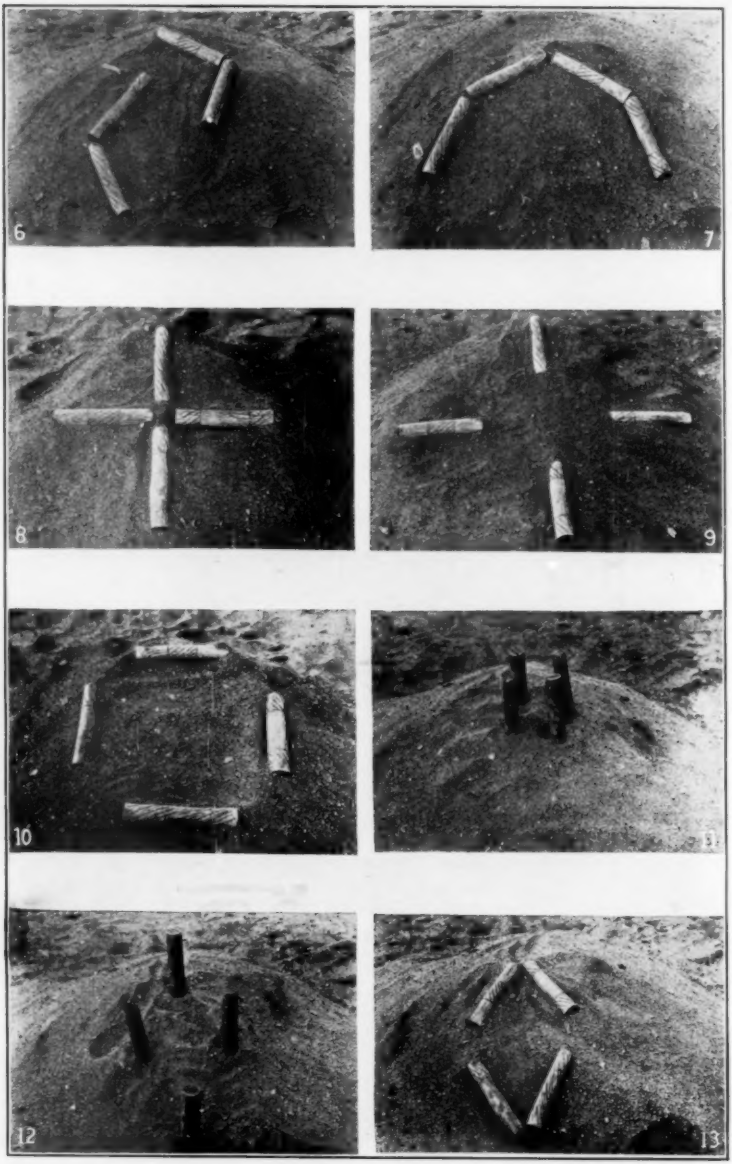
Pl. IX, fig. 4. Tewa *kwą̂'*, 'rain'. The design shown in the chart, fig. 4, makes it probable that the stick lying at an angle with the other represents the cloud from which the rain descends. This stick is always placed diagonally lest the figure be confused with *scb̆c*, 'growth of hair on the face' (pl. XIII, fig. 5). This figure is identical with one form of the *'ɛhɛ*, 'tablita headdress', design (pl. XVII, fig. 5).

Pl. IX, fig. 5. Tewa *tsiguwą̈nu*, 'lightning'. This evidently represents a zigzag lightning bolt; compare fig. 5 of the chart, which is copied from a lightning bolt issuing from the mouth of a bear in a pottery painting. This figure is rarely made so carelessly that it would be confused with the cloud figures (pl. IX, figs. 1 and 2), *pugaʃɻ'η*, 'flight of sand-hill cranes' (pl. XI, fig. 3), *'cku*, 'hills' (pl. XII, fig. 1), or with *kabajùndɛ'*, 'horse penis', also called *qwiɬi*, 'in a line' (pl. XIV, fig. 11). The figure is usually oriented so that it "shoots toward the guesser."

Pl. X, fig. 6. Tewa *tsiguwą̈nu*, 'lightning'. This represents two lightning flashes. It is not confusable with any other figure.

Pl. X, fig. 7. Tewa *kwą̂'tɛ'mbɛ'*, 'rainbow' (*kwą̂'*, rain; *tɛ'mbɛ'*, wheel). Compare the pottery painting reproduced in the chart, fig. 6.

Pl. X, fig. 8. Tewa *'agcjc*, 'star'. This is often confused with



FIGURES REPRESENTING CELESTIAL OBJECTS—CONTINUED

6, *tsiguwąnu*, lightning. 7, *kwą̂'te'mbɛ*, rainbow. 8, 9, *'agcjc*, star. 10, *'agcjcsc'jc'*, morning star. 11, *k'ą̂'ŋt'ambɛ'*, 'meal-jar constellation.' 12, 13, *k'u'qwiʌ'sipu'*, 'belly-of-sling constellation.'

'cgcwi'q̈·η, 'roadrunner's foot', although the latter should properly be viewed as a reader views an *x*. Mrs Stevenson speaks of "a cross signifying the four regions" among the Zuñi.[1] The figure is identical with the pottery painting of the chart, fig. 7. Mrs Stevenson informs the writer that in Zuñi pictographs a cross is said to signify the Morning Star. It is reported that among the Navaho "*so*", 'star', is represented by a St Andrews cross.[2]

Pl. x, fig. 9. Tewa *'agcjc*, 'star'. This differs from the preceding figure in that the sticks do not touch each other. No such star design as this is known to occur in San Ildefonso pottery design.

Pl. x, fig. 10. Tewa *'agcjcsc'jc'*, 'the morning star' (*'agcjc*, star; *sc'jc'*, large). This differs from *teqwa*, 'house' (pl. xv, fig. 1) in that the sticks are not contiguous. The figure reminds one of the morning star design reproduced in the chart, fig. 8. Sometimes this figure is turned so that it stands on edge, thus becoming similar in form to *tsiguwä̈nu*, 'lightning' (pl. x, fig. 6), and *k'u'qwiɬsipu'*, 'belly of a sling' (pl. x, fig. 13, and pl. xvi, fig. 6). One informant apologized that the edges of the star are really not straight, but one can not make them curved using four sticks. Curiously enough, the Franciscan Fathers report that the Navaho also call a diamond-shaped figure either "*beědill'i' nähălin*", 'slingshot like', or "*sôtso*", 'big star'.[3]

Pl. x, fig. 11. Tewa *k'q̈·ηt'ambɛ'*, 'meal-jar constellation' (*k'q̈·η*, meal, flour; *t'ambɛ'*, large drying jar). This is the Tewa name of the constellation *Corona borealis*, popularly known in English as the Northern Crown. The stars of this constellation, brightly studded in the black sky, form the regular outline of a *t'ambɛ'* or drying bowl such as the Tewa still employ for drying meal. Each stick, standing on end, is supposed to represent a star; but there are in reality more than four stars in the constellation. The figure resembles *t'cwà*, 'people' (pl. xiii, fig. 1), which shows people

[1] M. C. Stevenson. The Zuñi Indians. *23d Ann. Rep. B. A. E.*, Washington, 1904, p. 399.

[2] The Franciscan Fathers, *An Ethnologic Dictionary of the Navaho Language*, St. Michaels, Arizona, 1910, p. 251.

[3] Ibid.

standing. The stars are said by the Tewa to be *t'cwà*, 'people'. The arrangement of the figure is identical with that of the figure to be next discussed.

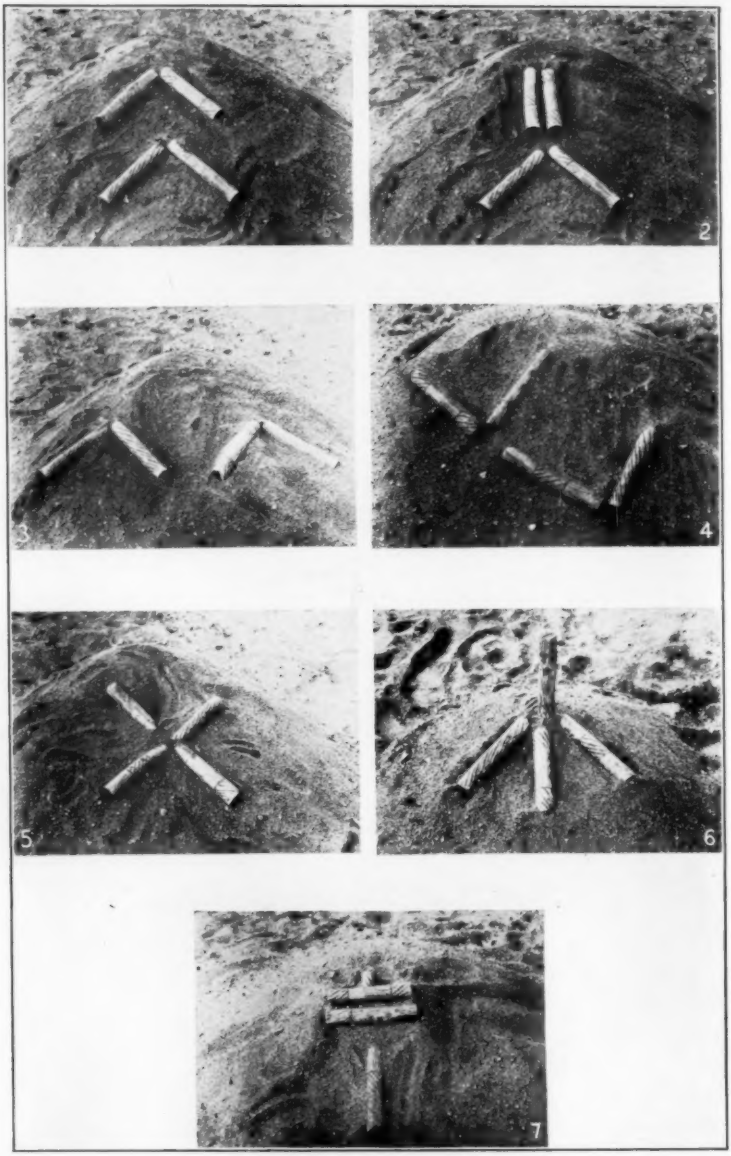
Pl. X, fig. 12. Tewa *k'u·qwiɬ̀sipu·*, 'belly-of-sling constellation' (*k'u·*, stone; *qwiɬ̀*, to sling; *sipu·*, the hollow below a person's ribs), referring to the belly or pocket of a sling where the missile is placed. This constellation is *Dolphinus*, popularly known in English as Job's Coffin. The arrangement is identical with that of the preceding figure. This constellation or the weapon after which it is called is more frequently represented by sticks lying flat; see pl. X, fig. 13, and pl. XVI, figs. 4, 5, and 6. When the sticks are arranged erect, the constellation, and not the weapon, is represented.

Pl. X, fig. 13. Tewa *k'u·qwiɬ̀sipu·*, 'belly-of-sling constellation'. Other forms of this figure, which represents either the belly of a sling or the constellation thus named, are shown in pl. XVI, figs. 4, 5, and 6. Fig. 6 of pl. XVI is identical with *sį*, 'vagina' (pl. XIII, fig. 7). The arrangement shown in pl. X, fig. 12, represents only the constellation.

2. FIGURES PERTAINING TO ANIMALS OF THE AIR

Pl. XI, figs. 1, 2, 3, and 4. Tewa *pugaʃɻ̀·ŋ*, 'flight of sand-hill cranes' (*puga*, sand-hill crane; *ʃɻ̀·ŋ*, flight). These birds are seen in the spring and the fall flying in a v-shape high over head. Their loud, harsh call may sometimes be heard. Figs. 1 and 3 of this plate might also represent clouds or hills; see pls. IX and XII. Fig. 2 of this plate, on the other hand, resembles *ndɛ̀·*, 'penis' (pl. XIII, fig. 6). It is indeed a variant form of the penis figure not shown in pl. XIII.

Pl. XI, fig. 5. Tewa *'cgcwi'ɻ̂·ŋ*, 'footprint of roadrunner' (*'cgcwi*, *Geococcyx californicus* Lesson, roadrunner; *'ɻ̂·ŋ*, foot, footprint). The word *'ɻ̂·ŋ* is used indiscriminately, meaning foot or footprint. In the *Boas Anniversary Volume* Dr Goddard notes that the Mescalero Apache render 'foot' and 'footprint' by a single word in their language. The roadrunner is called *paisano* in New Mexican Spanish, and is also known to the Americans by the name 'chaparral cock'. The footprints of this bird are x-shaped and it



FIGURES REPRESENTING ANIMALS OF THE AIR OR THEIR PARTS

1–4, *pugaʃɻ·ŋ*, flight of sand-hill cranes. 5, *'cgcwi'q̂·ŋ*, footprint of road-runner. 6, *p'i·ŋndi'q̂·ŋ*, foot of wild turkey. 7, *tsiʲɛ*, bird.

is difficult to tell from them in which direction the bird was going. It is probably for this reason, and also because there are four toes, that these footprints have come to symbolize the four directions or the universe: *t'ą̈kipijè*, 'all directions' (*t'ą̈ki*, all; *pijè*, direction, locative postfix); *'c·pa·*, 'the universe'. Fig. 9 of the chart shows this symbol as it occurs on pottery.

In the figure representing the roadrunner's footprint the sticks form right angles with each other; the *hɻ'ɻ*, 'doll' (pl. XIII, fig. 8) is distinguished by having two acute and two obtuse angles.

Pl. XI, fig. 6. Tewa *p'i̱·ŋndi'i̱·ŋ*, 'foot of wild turkey' (*p'i̱·ŋ*, mountain; *ndi*, formerly 'wild turkey', now 'domestic fowl'; *'i̱·ŋ*, foot, footprint). This is one of the most realistic of the figures.

Pl. XI, fig. 7. Tewa *tsiɻɛ*, 'bird'. This name refers to any species of bird, and the compound *p'c·tsiɻɛ*, 'water bird' (*p'c·*, water; *tsiɻɛ*, bird), even applies to some sort of insect that hovers over pools of water. The design shown in the chart, fig. 10, occurs on a piece of ancient pottery found in the Pajaritan Plateau, west of San Ildefonso, and has been supposed to represent a dragon-fly. The dragon-fly is called in Tewa *p'c·ndɻ·ŋndɻ·ŋ* (*p'c·*, water; *ndɻ·ŋndɻ·ŋ*, to whir like a bullroarer), but the Tewa declare that this cañute figure is a bird and not a dragon-fly.

3. FIGURES REPRESENTING GEOGRAPHICAL FEATURES

Pl. XII, fig. 1. Tewa *'cku*, 'hills.' *P'i̱·ŋ* is used of mountains. This figure is identical with *pugaʃɻ·ŋ*, 'flight of sand-hill cranes' (pl. XI, fig. 3), and is similar to *'ck'uwà*, 'cloud' (pl. IX, fig. 2), and to *pugaʃɻ·ŋ*, 'flight of sand-hill cranes' (pl. XI, fig. 1). The chart, fig 11, shows hills as depicted on San Ildefonso pottery.

Pl. XII, figs. 2 and 3. Tewa *p'i̱·ŋwi'ɨ*, 'mountain pass' (*p'i̱·ŋ*, mountain; *wi̱'ɨ*, pass). A wider gap in the mountains, represented by placing the two groups of sticks farther apart, is called *p'i̱·ŋwa·ɻ̀*, 'wide gap in the mountains' (*p'i̱·ŋ*, mountain; *wa·ɻ̀*, wide gap) (pl. XII, fig. 3). A *p'i̱·ŋwa·ɻ̀* as executed in pottery decoration is shown as fig. 12 of the chart.

Pl. XII, fig. 4. Tewa *k'ɻ·ŋnaƀà*, 'cornfield' (*k'ɻ·ŋ*, corn, *Zea mays; naƀà*, 'cultivated field'). A pottery design representing a cornfield

is shown in fig. 13 of the chart. In it, the object shaped like an Edam cheese is said to be an ear of corn, while the horizontal line beneath it represents the field. It is the intention in both designs to show a growing corn plant.

Pl. XII, fig. 5. Tewa *kwi'c*, 'irrigating ditches'. The Tewa used to have irrigating ditches in pre-European times, they tell us. This figure differs from *p'c'sc''gɛ̀*, 'great river' (pl. XII, fig. 6), in that in the latter the channel between the sticks is greater, and from *qwats'igɛ*, 'street' (pl. XV, fig. 3), in that the latter has the space between the two rows of sticks greater and the two sticks forming each row do not touch each other. In the chart, fig. 14, the two parallel lines are said to represent an irrigation ditch in connection with a flower.

Pl. XII, fig. 6. Tewa *p'c'sc''jc'*, 'great river' (*p'c'*, water, river; *sc''jc'*, great). This is a picture of the Rio Grande, which is usually meant when *p'c'sc''jc'* is used. Fig. 15 of the chart shows hills and a *p'c'sc''jc'* (the two parallel lines). This figure differs from *kwi'c*, 'irrigating ditch' (pl. XII, fig. 5), in having the two rows of sticks farther separated, and from *qwats'igɛ*, 'street', in having the two sticks forming each of these rows touching each other.

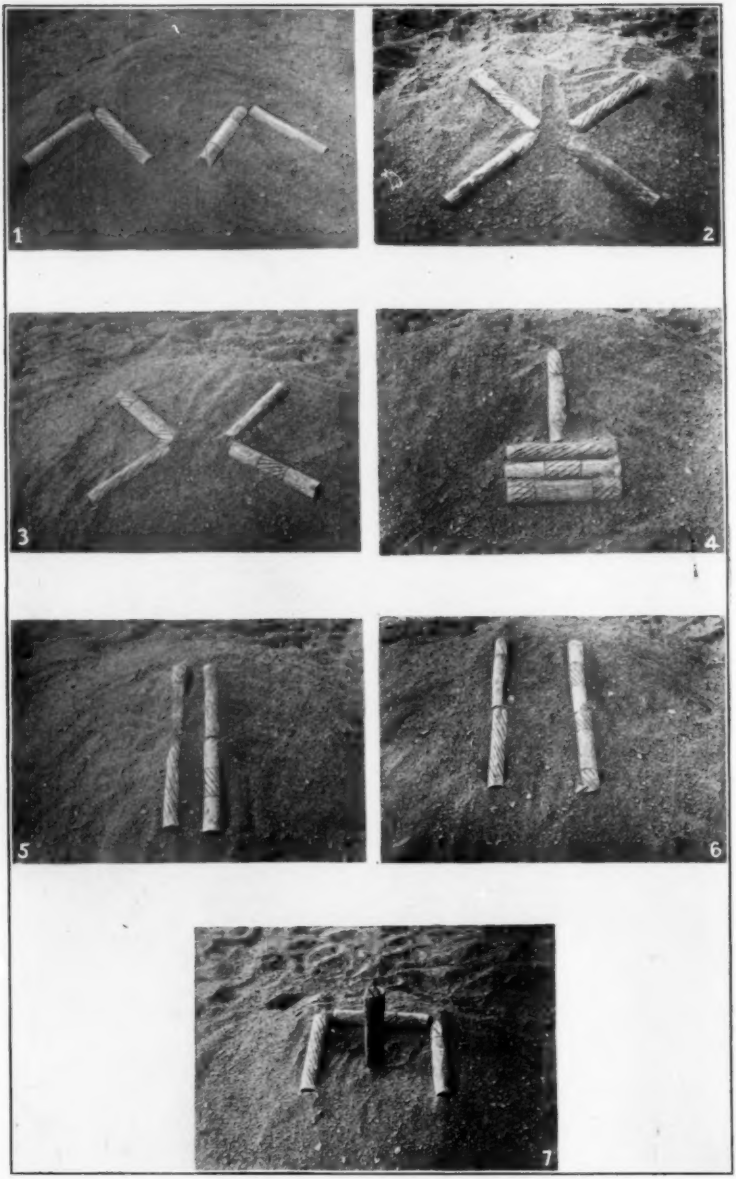
Pl. XII, fig. 7. Tewa *p'c'tsa'*, 'meadow with water oozing out in places in it' (*p'c'*, water; *tsa'*, to cut through, to ooze out). The stick standing erect represents the water coming up or out. Such places occur along the creeks and are called *cienegas* in New Mexican Spanish.

4. FIGURES REPRESENTING THE HUMAN FORM, ITS PARTS OR EFFIGY

Pl. XIII, fig. 1. Tewa *t'cwà*, person, people. Of the people the informants said *ndiŋwɨ̀'ŋ*, 'they are standing' (*ndi*, they 3+, animal gender; *ŋwɨ'ŋ*, to stand). This figure is confusable with *k'ą̈'ŋt'ą̂mbɛ'*, 'meal-jar constellation' (pl. X, fig. 11), and *k'u'qwiɬsipu'*, 'belly of sling constellation' (pl. X, fig. 12).

Pl. XIII, fig. 2. Tewa *wi t'cwà nąhɛ'*, 'one person is sick' (*wi*, one; *t'cwà*, person, people; *nąˆ*, he, she; *hɛ'*, to be sick). The other three persons are visiting the sick person.

Pl. XIII, fig. 3. Tewa *t'cwà ɬimą̈'ą̄*, 'the people are marching'



FIGURES REPRESENTING GEOGRAPHICAL FEATURES

1, *'cku*, hills. 2, *p'i'ŋwi'i*, mountain pass. 3, *p'i'ŋwa'ɬì*, wide gap in the mountains. 4, *k'u'ŋnabà*, cornfield. 5, *kwi'c*, irrigation ditch. 6, *p'c'sc'jc'*, great river. 7, *p'c'tsa'*, meadow.

(*ṭ'cwà*, person, people; *ndi*, they 3+, animal gender; *mą̈'ǫ̈*, to go). Of them could also be said *ndiqwaɬ̀mą̈'ǫ̈*, 'they are marching in a line' (*ndi*, they 3+, animal gender; *qwaɬ̀*, a line; *mą̈'ǫ̈*, to go).

Pl. XIII, fig. 4. Tewa *ṭ'cwà ɬєjckwc*, 'the people are lying asleep' (*ṭ'cwà*, person, people; *nde*, they 3+, animal gender; *jc*, asleep; *kwc*, to lie, used of 3+). One informant made the obscene remark that they are men and women lying together. The figure differs from *tєqwap'є*, 'house rafters' (pl. XV, fig. 2), in that the sticks are not contiguous in the latter. It may easily be confused with *kwǫ̇'*, 'rain' (pl. IX, fig. 4).

Pl. XIII, fig. 5. Tewa *sc̄c*, 'growth of hair on the face'. It was the custom to pluck all beard hairs from the face. The word *sc̄c* is frequently applied as a nickname to Mexicans or to women on whose faces there is a considerable growth of hair. Sometimes the three sticks radiate, sometimes they are parallel. The stick representing the face is often almost completely covered. This figure would not be confused with *kwǫ̇'*, 'rain' (pl. IX, fig. 4).

Pl. XIII, fig. 6. Tewa *ndє'*, 'penis'. The two sticks at the top of the picture represent the *wa'k'u'*, 'testicles'. The whole figure is sometimes called *ndє'wak'u*, 'penis and testicles' (*ndє'*, penis; *wa'k'u'*, testicles), or *ndє'sc''jc'*, 'big penis' (*ndє'*, penis; *sc''jc'*, big), or *wa'k'u'sc''jc'*, 'big testicles' (*wa'k'u'*, testicle; *sc''jc'*, big). A variant form of this figure is identical with one form of the *pugaʃu'η*, 'flight of sand-hill cranes' (pl. XI, fig. 2). Three other figures representing each a penis are shown in pl. XIV.

Pl. XIII, fig. 7. Tewa *sį*, 'vagina' or 'vulva'. Sometimes it is called *sįsc''jc'*, 'big vagina' (*sį*, vagina; *sc''jc'*, big). This figure is identical with one form of *k'u'qwirɬ̀sipu'*, 'belly of a sling' (pl. XVI, fig. 6), and closely resembles the other form of the same figure shown in pl. XVI, fig. 5. (See also pl. XVI, fig. 1.) The vagina is always oriented so that its greater axis points toward the guessers.

Pl. XIII, fig. 8. Tewa *hu'u*, 'doll'. This figure is carefully distinguished from *'cgcwi'ǫ̇'η*, 'footprint of roadrunner' (pl. XI, fig. 5), the sticks in the latter figure forming right angles with each other.

Pl. XIV, figs. 9 and 11. Tewa *kabajùndє'*, 'horse penis' (*kabajù*, horse < Sp. caballo; *ndє'*, penis), or *qwiɬ̀*, 'in a row'. In fig. 11 the

line formed by the sticks is not as straight as in fig. 9. Sometimes it is almost as crooked as in *tsiguwäⁿnu*, 'lightning' (pl. IX, fig. 5). The figures are also called *mbundùndeˑ*, 'donkey penis' (*mbundù*, donkey, < Sp. burro; *ndeˑ*, penis). For other penis figures see pl. XIII, fig. 6, and pl. XIV, fig. 10. The Tewa call the three bright stars of Orion's belt *'agcjc qwiɬ'įŋ*, 'stars in a row' (*'agcjc*, star; *qwiɬ*, row; *'įŋ*, postfix indicating 3+ number, animal gender).

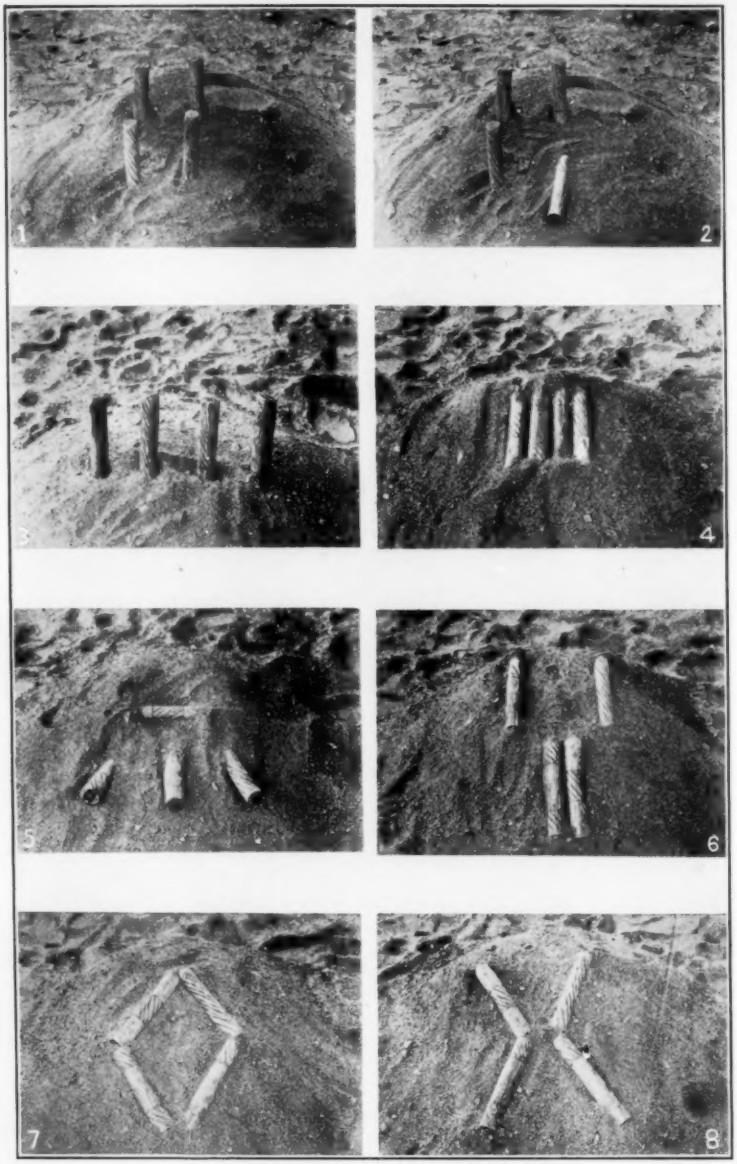
Pl. XIV, fig. 10. Tewa *ndeˑsc'jcˑ*, 'big penis' (*ndeˑ*, penis; *sc'jcˑ*, big). Also called merely *ndeˑ*, 'penis'. The v-shaped part represents the *waˑk'uˑ*, 'testicles'. For other penis figures see pl. XIII, fig. 6, and pl. XIV, figs. 9 and 11.

5. FIGURES REPRESENTING HOUSES OR PARTS OF HOUSES

Pl. XV, fig. 1. Tewa *teqwa*, 'house'. *Teqwa* refers to a single house, not to a houserow, which is called *qwasµŋ*, nor to a pueblo or village, which is called *'µŋwį*. This figure must not be confused with *'agcjcsc'jcˑ*, 'the morning star' (pl. X, fig. 10).

Pl. XV, fig. 2. Tewa *teqwapˑɛ*, 'house rafters' (*teqwa*, house; *pˑɛ*, stick, pole, beam). These are known in Spanish as *vigas*. They are logs, usually of *ŋwäˑŋ*, 'rock pine,' which are laid parallel to each other at distances a foot or two apart across the tops of the house walls. They are covered with boughs, brush, and earth. After being felled, the logs were allowed to lie until they became lighter and were then taken to the village, each on the shoulders of several men. This figure is sometimes confused with *kwâˑ*, 'rain' (pl. IX, fig. 3), or with *t'cwà rɛjckwc*, 'the people are lying asleep' (pl. XIII, fig. 4). A rare divergent form of this figure is the same as *qwats'ige*, 'street' (pl. XV, fig. 3). Still another arrangement is to place the sticks at the four corners of an imaginary square, oblong, or rhombus, laying them all parallel with each other; see *pˑɛ*, 'poles' or 'rafters' (pl. XV, fig. 7).

Pl. XV, fig. 3. Tewa *qwats'igɛ*, 'street'. This word refers to streets or long open spaces between house rows in Indian pueblos. It differs from *p'cˑsc'jcˑ*, 'great river' (pl. XII, fig. 6), in not having its sticks touch one another. A divergent form of *teqwapˑɛ*, 'rafters' (pl. XV, fig. 2), is identical with this.



FIGURES REPRESENTING THE HUMAN FORM, ITS PARTS, OR EFFIGY

1, *t'cwà*, people. 2, *wi t'cwà nâhɛ̀*, one person is sick. 3, *t'cwà ɬimą̈'ą̈*, the people are marching. 4, *t'cwà ɬɛjckwɛ*, the people are lying asleep. 5, *scbc*, growth of hair on the face. 6, *ndɛ̀*, penis. 7, *sį*, vagina. 8, *hu'u*, doll.

Pl. XV, fig. 4. Tewa *ʃɛ'ɛ*, 'ladder'. The word also refers to stairs. The Tewa constructed ladders, the rungs either being lashed on to or running through holes in the side poles. They were used in climbing to the houseroofs from the outside and in descending to the floor of the room from the roof-hole (*k'cjip'o'*), and vice versa. The ladders used in gaining entrance to the *tɛ'ɛ*, 'kivas', were very long and projected high above the structure.

Pl. XV, fig. 5. Tewa *mbɛnɻndɬtɛ*, 'melon watch-house' (*mbɛnɻndɬ*, muskmelon, < Sp. *melon; tɛ*, house, used in compounds). Little houses with frame of poles and sides and roof of brush are constructed for watching over fields where there are crops that are likely to be stolen. Often one side, or more, is open. People stay at and sleep in such shacks in order to guard their fields.

Pl. XV, fig. 6. Tewa *tɛ'a'*, 'tipi', 'wigwam' (*tɛ*, house, in compounds; *'a'*, cloth). The *Jutà*, 'Utes', *Kɻmą̊ŋtsi*, 'Comanches', and some other tribes are known by the Tewa to live in such houses.

Pl. XV, fig. 7. Tewa *p'ɛ*, 'logs', 'poles', 'rafters'. This is sometimes also called *teqwap'ɛ*, 'house rafters'; compare *teqwap'ɛ*, 'house rafters' (pl. XV, fig. 2).

6. FIGURES REPRESENTING WEAPONS

Pl. XVI, fig. 1. Tewa *suɬɛ*, 'bow and arrow'. Matthews gives a Navaho bow symbol that looks like a capital letter B: "Diagram of the bow-symbol on the left leg of the personator of Nayénězgani."[1] There is also occasionally a very obscene interpretation of this bow and arrow figure.

Pl. XVI, fig. 2. Tewa *sutsi'i*, 'arrow-point' (*su*, arrow; *tsi'i*, point). This figure may be confused with *jɻ'ŋp'ɛ*, 'spear' (pl. XVI, fig. 3). Fig. 16 in the chart shows an arrow-point copied from a San Ildefonso bowl. The form is identical with that of the cañute figure, although a Tewa arrow point actually had quite a different shape.

Pl. XVI, fig. 3. Tewa *jɻ'ŋp'ɛ*, 'spear' (*jɻ'ŋ*, to pierce; *p'ɛ*, stick, pole). This figure may be confused with *sutsi'i*, 'arrow point' (pl. XVI, fig. 2).

Pl. XVI, figs. 4, 5, and 6. Tewa *k'u'qwiɬsipu'*, 'belly of a sling'

[1] Washington Matthews, *Navaho Legends*, p. 253.

(*k'u'*, stone; *qwiʌ̀*, to sling; *sipu'*, the hollow below a person's ribs). Fig. 6 is identical with *sį*, 'vagina' (pl. XIII, fig. 7). In order to obviate this identity the sling belly is usually shown turned as in fig. 4 or split in the middle as shown in fig. 5. The form split in the middle has its counterpart in San Ildefonso design; see the chart, fig. 17. If not carefully made, *k'u'qwiʌ̀sipu'* is apt to resemble *tsiguwą̆nu*, 'lightning' (pl. X, fig. 6), or *'agcjcsc'jc'*, 'the morning star' (pl. X, fig. 10). What we call a diamond, rhombus, or rhomboid form, or tilted square or oblong, seems to be quite generally termed sling venter by the Indians of the Southwest. Thus the Franciscan Fathers give: "*bĕĕditl'î' năhălĭn*, (slingshot-like), a diamond, also called *sôtso*, big star"; "*bĕĕditl'îhi* (slingshot), an elongated diamond";[1] "*bĕĕditl'î' baba dolăghăs* (slingshot with serrated edge), diamond with serrated edge";[2] "*bĕĕditl'î', năhălĭnigi bĕătqi'ăz'â'* (slingshot-like figures within each other), diamond within diamond."[2] Of the use of the *k'u'qwiʌ̀*, 'sling', what the Franciscan Fathers say of the Navaho will apply equally well to the Tewa. "The slingshot, consisting of a diamond-shaped piece of leather to hold the stone, and two cords, one of which is released in swinging it, is also used in killing birds, or throwing at sheep when herding."[3]

Pl. XVI, fig. 7. Tewa *tsijc'p'a'*, 'sword' (*tsi'i*, point, blade; *jc'*, augmentative; *p'a'*, flat and with roundish edge). The Tewa state that they probably had no weapon known by this name before the Mexicans came. The figure is identical with *p'ɛ̨ŋwi'ŋ*, 'cross' (pl. XVII, fig. 7).

7. FIGURES REPRESENTING OBJECTS USED IN RELIGIOUS DANCES

Pl. XVII, figs. 1 and 2. Tewa *k'c'sàsɛ̨'ŋ*, 'Chifoneti horns' (*k'c'sà*, Chifoneti; *sɛ'ŋ*, horn). The Chifoneti fraternity is known as *k'csà* at the Tewa villages, as *k'ćfaèrɛ* at Cochiti (Bandelier's "Koshaire") and as "*Néwekwe*" at Zuñi. Male members of this fraternity tie their hair in two horn-like bunches on certain occasions. These are called

[1] The Franciscan Fathers, op. cit., p. 251.

[2] Ibid., p. 252.

[3] Ibid., p. 325.

FIGURES REPRESENTING THE HUMAN FORM, ITS PARTS, OR EFFIGY—CONTINUED

9, *kaɓajùndɛ̀*, horse penis. 10, *ndɛ̀sc'ʼjc'*, big penis. 11, *kaɓajùndɛ̀*, horse penis, or *qwiɬì*, in a line.

k'c'sàsɛ'η, 'Chifoneti horns'. Compare the head of a Chifoneti copied from San Ildefonso pottery (chart, fig. 18). See Mrs Stevenson's report on the Zuñi Indians for an illustration of a *k'c'sà* wearing his hair in this way.[1]

The shape of the cañute figures is very realistic. The form shown in pl. XVII, fig. 2, is said to be preferable to that shown in pl. XVII, fig. 1, since it is not as easily confused with *'ck'uwà*, 'cloud' (pl. IX, fig. 1).

Pl. XVII, figs. 3, 4, and 5. Tewa *'ɛhɛ*, 'tablita headdress'. Thin boards, variously shaped and painted, are worn on the heads of women dancers in *tablita* dances, Spanish *tablita*, 'tablet', being the name given by the Mexicans to the boards and also the dances in which they are used. The *'ɛhɛ* are said to represent clouds, and some of them have the sun, moon, or stars cut or painted on them. A picture of one kind of tablita being worn by a maiden is found in Mrs Stevenson's report on the Zuñi Indians.[2] A cloud painting taken from San Ildefonso pottery and said to be an *'ɛhɛ* is given in the chart, fig. 19. The Franciscan Fathers call a similar pattern "*k'ŏsyishchín* (cloud image)."[3] The variety of the cañute tablita figure given in pl. XVII, fig. 5, is the same as *kwâ'*, 'rain' (pl. IX, fig. 4).

Pl. XVII, fig. 6. Tewa *pc'ᵉwijɛ̀*, 'gourd rattle', or *pμ'ηmbɛ'*, 'bell' (*pμ'η*, to make a ringing noise; *mbɛ'*, small and roundish like a ball). Whether the Tewa obtained small metallic bells from the south in pre-European times is uncertain.

Pl. XVII, fig. 7. Tewa *p'ɛηwi'η*, 'cross', literally 'standing stick' (*p'ɛ*, stick, pole; *ηwi'η*, to stand). The makers had in mind the Roman Catholic cross.

A Game as Actually Played

It is an ideal method to describe a game as it was actually observed to be played. Such a description should always accompany a description of the general theory and rules of a game. The

[1] M. C. Stevenson, The Zuñi Indians, *23d Ann. Rep. B. A. E.*, Washington, 1904, p. 436.

[2] Ibid., pl. 38.

[3] The Franciscan Fathers, op. cit., p. 253.

cañute game described was played by four Indians whom we shall designate as A, B, C, and D.

D laid fifty kernels of corn as the pool on the ground about ten feet from pile no. 1, while all looked on. No stakes were made.

A hid the pin in one of two sticks on pile no. 1, their openings covered and their closed ends projecting toward pile no. 2. C walked from his pile to pile no. 1 and found the pin in the first stick he lifted. C and D therefore became the dealers.

1. The figure was XIII: 1. A guessed, finding the stick in the fourth stick guessed. D took four kernels from the pool and laid them near pile no. 1.

2. The figure was XIII: 8. B guessed, finding the pin in the second stick guessed. D took 6 more grains from the pool and deposited them with the others belonging to his side.

3. The figure was XIII: 8. A guessed, finding the pin in the third stick guessed. A and B now became dealers. No kernels changed hands.

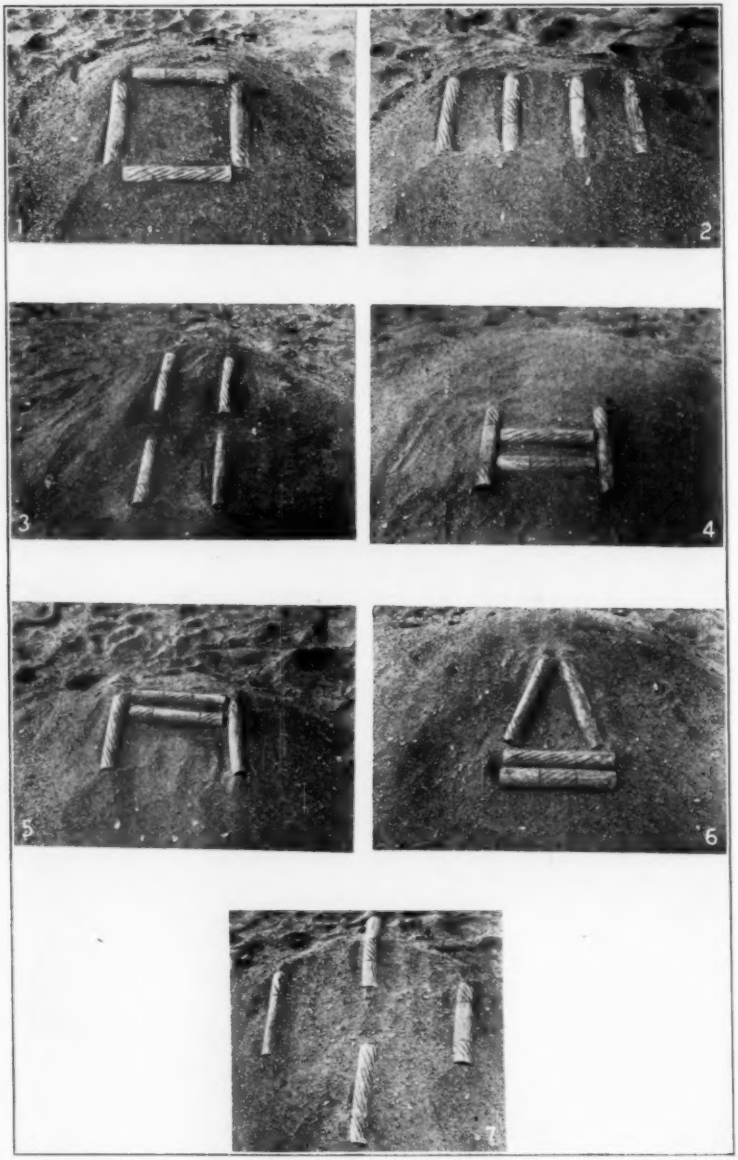
4. The figure was XV: 2. C guessed, finding the pin in the third stick guessed. B took ten kernels from the pool for his side, laying them near pile no. 2, the pile of his side.

5. The figure was XV: 2. C guessed. He said, after raising two of the sticks, that the pin must be in the *ti'įŋ*. He tapped the *ti'įŋ* with one of the sticks he had taken up and then quickly lifted the other stick remaining on the pile, which he had not tapped. The pin was not in it. That showed that the pin must be in the *ti'įŋ*, as he had shown that he thought it was by tapping it. C and D's side got the deal.

6. The figure was XV: 2. D cautioned A and B to stay by their own pile while he was putting the pin in. "Go back to your place; don't be watching here," he said. B guessed, finding the pin in the second stick guessed. C took six kernels from the pool for his side.

7. The figure was XV: 2. A guessed, finding the pin in the fourth stick guessed. C took four kernels from the pool for his side. "You are a good guesser; you know every time," he said to A.

8. The figure was X: 8. B guessed, finding the pin in the fourth



FIGURES REPRESENTING HOUSES OR THEIR PARTS

1, *teqwa*, house. 2, *teqwap'e*, house rafters. 3, *qwats'igɛ*, street. 4, *ʃɛ'ɛ*, ladder. 5, *mbɛnundi'ɛ*, melon watch-house. 6, *tɛ'a'*, tipi. 7, *p'e*, poles or rafters.

stick guessed. C took four kernels from the pool for his side. C was singing the cañute song while B was guessing.

9. The figure was XV: 2. B guessed. C continued to sing.

CHART OF DESIGNS COPIED FROM SAN ILDEFONSO AND ANCIENT PUEBLO POTTERY

"*Tq̈·, tq̈·*," he said as he stopped singing, and slapped B on the back. B guessed, finding the pin in the third stick guessed. No kernels

changed hands, of course. A and B became dealers, A hiding the pin. A noticed that only two kernels were left in the pool.

10. The figure was IX: 3. C guessed, finding the pin in the fourth stick guessed. B took the two kernels left in the pool for his side, though his side really deserved to have four, of course. From now on forfeits had to be paid out of the pools of the sides, for all the kernels were in possession of one side or the other. There was no common pool any more.

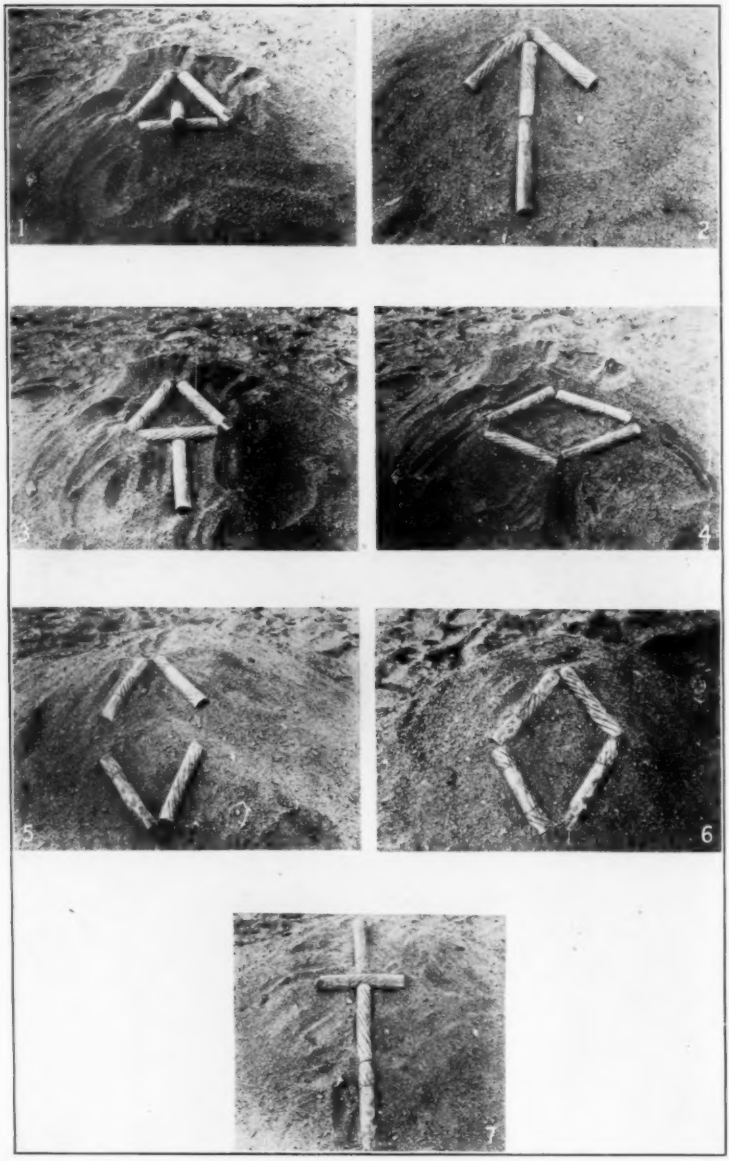
11. The figure was IX: 4. D guessed, finding the pin in the third stick guessed. "Come get your money," C called out. A went over and received ten kernels from C and D's pool.

12. The figure was XVII: 3. C and D assisted each other in guessing, finding the pin in the first stick guessed. Meanwhile B sang loudly portions of the Mexican versions of the cañute song.

13. The figure was XVII: 1. C lifted the first stick, D the second, but according to C's directions. Then C stood the stick he had taken up on end so near the ones remaining untouched that if it fell it might hit one of them. He held it in this position with the fingers of his right hand. When it fell it did not hit one of the sticks still lying, but pointed toward one. Then taking the stick which D had taken up, C struck with it the stick on which the divining stick had not fallen. This stick was then lifted by him, and the pin was not in it. But the pin was not to be found in the remaining stick either. " Where is it?" exclaimed C. At last the pin was found by C stuck in one of the sticks. As to the order in which this stick was raised, there was a dispute. And so A hid the pin and arranged the figure again—the same figure as before. And C and D guessed again, finding the pin in the third stick guessed. C and D's side now got the deal, or rather "got the sticks," as they put it.

14. The figure was IX: 5. B found the pin in the fourth stick guessed, and paid C and D four kernels.

15. The figure was XII: 1. A and B took turns guessing. C tried to make them think the pin was in the wrong stick. They found it in the fourth one which they guessed and paid C and D four kernels. "Yes, but you don't make ten a single time, only four, four, four," said A.



FIGURES REPRESENTING WEAPONS OR THEIR PARTS

1, *su⁴ɛ*, bow and arrow. 2, *sutsi'i*, arrow-point. 3, *jų'ŋp'ɛ*, spear. 4–6, *k'u'qwi⁴ɬsipu'*, 'belly-of-sling constellation.' 7, *tsijᵛp'a'*, sword.

16. The figure was XIII: 6. C said, "Four, four, all the time, just four, but now the pin will be in the first one you pick up." A guessed. "I will take the *pinda*, 'point of the penis', first" (the figure was a penis), said A. There was no pin in it. "I fooled him," said A. "You will find it in the *mulàsɛ̨́ ŋndc*, 'old mule', then," said C. "I shall find it in his testicles," said A. A lifted the other stick, which formed the penis, but no pin. Then he raised one of the other sticks, but it did not contain the pin. Last of all he took up the 'old mule'. In it was the pin. C fairly shouted, "I told you so!" "And I said I was going to pay you only four all the time," said A. He paid C four.

17. The figure was XIII: 7. "Now you fellows are going to give me ten kernels," said C. A found the pin in the first stick guessed. "C told me he put the pin into that stick and I believed it," said A. C took the ten kernels.

18. The figure was XIII: 7. A and B assisted each other in guessing, using a stick to divide with as described before. They found the pin in the third one guessed, and got the deal.

19. The figure was XIV: 10. One of the sticks representing a testicle had its open end pointed away from the center of the figure. C insisted that because of this carelessness the sticks must be forfeited to his side. The faulty dealers did not object.

20. The figure was XV: 1. A guessed, finding the pin in the second stick guessed. B paid C six kernels.

21. The figure was XIV: 10. C said, "He is going to pay me ten." A guessed, finding the pin in the first stick lifted. C and D's side was paid ten kernels, which just took all the kernels A and B had left. "It just came out even," said C. "I wish I had something to divide with you," said C to D, meaning that he wished the game had been played for stakes. "*Hi'wc' nq̂'ɛ̨́hq̂́*," 'He knows how to play well' (*hi'wc'ᵉ*, well; *nq̂*, he; *'ɛ̨́*, game; *hq̂́*, to know), said D, referring to C.

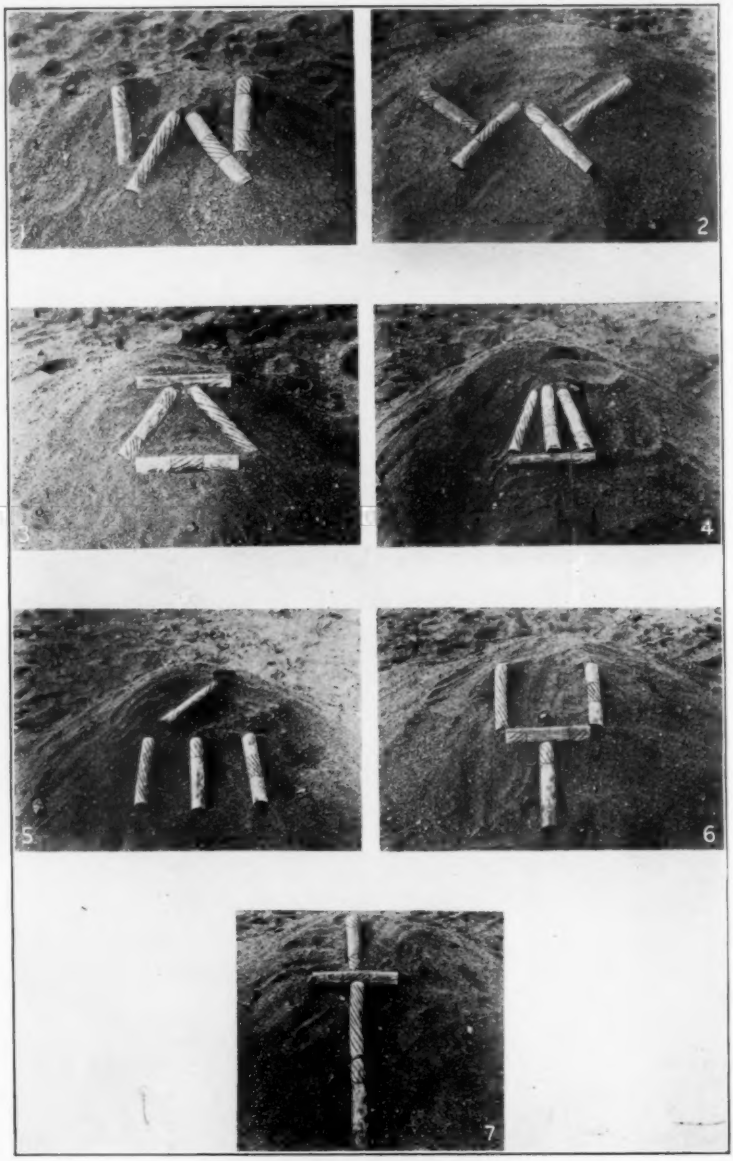
Some expressions heard during the game were: *ŋgq̄nuwq̄̀*, "you 1 guess!" (*ŋgq̄*, you 1, prefixed pronoun, second pers. sing.; *nuwq̄̀*, to guess); *mbinuwq̄̀*, 'you 2 guess!" (*mbi*, prefixed pronoun, second pers. sing.; *nuwq̄̀*, to guess); *nq̂́ ɬctɥwq̄gi'c'ᵉ*, 'I am going to hunt

or guess' (*nq̂·*, I, emphatic pronoun; *ndc*, I it, prefixed pronoun denoting a combination of first pers. sing. subject and third pers. sing. object; *tɥwq̂*, to hunt; *gi'c'ᵉ*, future tense sign); *ndcfa·*, 'I have found it' (*ndc*, I it, prefixed pronoun denoting a combination of first pers. sing. subject and third pers. sing. object; *fa·* to find); *nq̂· 'ctq̂·ŋpc*, 'I have won' (*nq̂·*, I, emphatic pronoun; *'c*, I, prefixed pronoun; *tq̂·ŋ*, a winning; *pc*, to make); *nq̂· ⁴ckatc'ᵉ*, 'I am hiding it' (*nq̂·*, I, emphatic pronoun; *ndc*, I it, prefixed pronoun denoting a combination of first pers. sing. subject and third pers. sing. object; *katc'ᵉ*, to hide); *'ɥ'ɥ 'ɥhcjc̆'i'ⁱ*, 'you I lied' (*'ɥ'ɥ*, you I, emphatic pronoun; *'ɥ*, you I, prefixed pronoun; *hcjc̆*, to lie; *'i'ⁱ*, there); *k'ɥ·ŋt'ɛ'iwɛ'i'ⁱ k'ɥ·ŋk'ɛ·*, 'the corn kernels in the pool' (*k'ɥ·ŋ*, corn plant; *tɛ*, house, in compounds; *'iwɛ*, there, where; *'i'ⁱ*, postfix denoting 3+ number, vegetal gender, referring to *k'u·ŋk'ɛ·*; *k'ɥ·ŋ*, corn plant; *k'ɛ·*, kernel, grain); *nq̂·''iŋmbi wakɥ'iŋgɛ⁴ì 'ibiwa'ᵃndɛ'ᵋ*, 'we 3+ are paying from our side' (*nq̂·''iŋmbi*, of us 3+, emphatic pronoun; *wakɥ*, side; *'iŋgɛ⁴ì*, from a side, locative postfix; *ibi*, we 3+, prefixed pronoun; *wa'ᵃ*, to pay; *ndɛ'ᵋ*, element denoting progressive tense); *'c'i'ⁱ wi 'c kuwà scb̆c*, 'that goat-beard' (*'c*, there; *'i'ⁱ*, postfix denoting singular number, animal gender; *wi*, one; *'c*, there; *kuwà*, mountain sheep, goat, sheep; *scb̆c*, beard, growth of hair on the face); *pu·p'c·k'ɥ·ŋwc*, 'dark anus' (*pu·*, base, buttocks; *p'c·*, hole; *k'ɥ·ŋwc*, dark); *wa·k'u·'q̂·p'a·*, 'brown flat testicles' (*wa·k'u·*, testicle; *'q̂·*, brown; *p'a·*, flat); *pindat'a·*, 'dry penis' (*pinda*, point of penis; *t'a·*, dry).

Cañute at Other Pueblos

In studying the game of *katc'ɛ·p'ɛ'ɛ·* as played at San Ildefonso we could doubtless find, as elsewhere in the ethnology of the Tewa, strong evidence of acculturation. We probably have in this game a blending of Indian and Mexican elements. A comparative study of the forms of the game current at the various pueblos would probably reveal important facts concerning its history.

Most of the literature on the "hidden ball" games of the Pueblo Indians is contained in the report by Culin previously cited, in which pages 335–339 are introductory to this class of games,



FIGURES REPRESENTING OBJECTS USED IN RELIGIOUS DANCES

1, 2, *k'c'sàsɛ'η*, chifoneti horns. 3–5, *'ehɛ*, head-dress. 6, *pc'ᶜwijè*, gourd rattle, or *pμ'ηmbɛ'*, bell. 7, *p'ɛηwi'η*, cross.

pages 351–353 describe the Keresan, 357–364 the Hopi, 367–370 the Tanoan, and 372–382 the Zuñi forms.

Mrs Stevenson describes the Zuñi form of the game under the name of "*i'yänkolo'we*" in her report on the Zuñi Indians,[1] and in addition contributes a description of the game to Mr Culin's report.

At Jemez some names of objects pertaining to the cañute game were obtained by the writer. The game is called by the Jemez *pâ'cù'wâ*, 'cane game' (*pâ'â*, cane,? *Phragmites phragmites*; *'cù'wâ*, game). The sticks appear always to be made of cane. A cañute stick is called *pâ'â*, dual *pâ'âʃ*, 3+ plural *pâ'â*. The pin is called *tʲɛkʲɨɲʃ*, 'little stick', dual *tʲɛkʲɨɲʃ*, 3+ plural *tʲɛkʲɨɲ* (*tʲɛ*, stick; *kʲɨɲ*, diminutive). The reed sticks shown in fig. 21 are from Jemez, and their markings may be compared with those of the set from San Ildefonso shown in the same figure. They are called

(1) *kʲ'clâ'*, 'at the top', referring to the one band (Tewa *wi'ɨŋ*).
(2) *witâ*, 'at two places', referring to the two bands (Tewa *wijɛ'ɨŋ*).
(3) *pctâ*, 'in the middle', referring to the band (Tewa *ti'ɨŋ*).
(4) *p̈cdâ*, said of big or bad freckles, referring to the spots (Tewa *mulàsɛ'ndc*). The corresponding stick at San Ildefonso is never spotted.

The Jemez play cañute mostly in winter: *tc̈c̈'* *'ɛpâ'cù'wânçnç'ç*, 'in winter they play cañute' (*tc̈c̈'*, winter; *'ɛ*, they 3+; *pâ'â*, cañute stick; *'cù'wɬ*, to play; *nçnç'ç*, progressive).

The following information was obtained from an Isleta Indian at Albuquerque. The Isleta call cañute *patul*, which the informant could not etymologize. The stick with a single band near one end is called *wimà*, 'one'; the stick with a single band near each end is called *wisi*, 'two'; the stick which is spotted all over is called *tc̈rc̈*, 'spotted'. At Isleta the sticks are made of wood and are called *ʃa'u'*, 'little sticks' (*ʃa'*, wood; *'u'*, diminutive).

A Taos Indian at Santa Fé furnished the following. The Taos call the game *kañutɛ* (< Sp. *cañute*) or *kañute'äpanä*, 'cañute game' (*kañute*, *cañute*, < Sp. *cañute*; *'äpanä*, game). The sticks are made of wood and are called *t'uʃitänä*, which the informant could not etymologize.

[1] M. C. Stevenson, op. cit., pp. 318, 333–341.

To witness a game of *katc'ɛ́p'ɛ'ɛ́* as played at San Ildefonso is an experience not soon to be forgotten. The game, as well as its setting, is picturesque. The old men take as much pleasure in playing it as do the little boys, and it seems just as real and important to them.

The antics of the "good guessing men" and the series of changing figures make the game entertaining to both player and onlooker.

SCHOOL OF AMERICAN ARCHÆOLOGY
SANTA FÉ, NEW MEXICO

CERTAIN RARE WEST-COAST BASKETS

By H. NEWELL WARDLE

THE basketry of primitive peoples, though one of the latest subjects to attract the attention of the ethnologist, is now recognized as well worthy of the closest study. Not only does it frequently represent the highest artistic expression of its maker, but it may point the way to important ethnologic conclusions. Its evidence is weighty, though never final, since today the dismemberment or forced association of kindred and of alien tribes on reservations, and the arbitrary demands of the white trader, are making sad havoc with this native art, while even in prehistoric times intertribal contact, in war, trade, and friendship, gave to local varieties a wider distribution. This latter, the natural increasing range of the basket—whether as loot, merchandise, or gift—is a valuable indicator, and opposed to the modern and wholly vicious artificial transplanting of types. The present limited knowledge of the older basketry renders important the publication of accurate descriptions of every genuine old specimen. The five which form the subject of this paper have been selected from the collections of The Academy of Natural Sciences of Philadelphia as differing, in one way or another, from any basket previously described.

The small covered basket (pl. XVIII, *a*) came to its present abiding place more than thirty years ago. It is unquestionably a Tlingit product, and is assignable to Emmons' type 16.[1] It exhibits the characteristic shoulder of the jar-shaped *qwutle-qwut* ("round or egg-like belly"), while the lid is surmounted by the rattle from which type 14 takes its name, *tudar-huck* ("noise inside"). More squat

[1] G. T. Emmons, The Basketry of the Tlingit, *Mem. Amer. Mus. Nat. Hist.*, vol. III, p. 255. Whether the lid to type 16 carries the rattle as does that of type 14 is not stated, but from the specimen figured by O. T. Mason (*Smithson. Inst. Ann. Rep.*, 1902, U. S. N. M., p. 67) it evidently has this characteristic.

in appearance than the jar figured by Emmons, the Academy's basket reaches only 81 mm. (*c.* 3.2 inches) in height, lid included, while its greatest diameter is 116 mm. (*c.* 4.6 inches).

The weave of the bottom is mostly the *khark-ghee-su't* ("between") or alternating two-strand twining and wickerwork, while the remainder of the basket shows only the regular *wush-tookh-a'r-kee* ("close together work") or two-strand twining, and is finished at the edge by trimming the warp. Into this basic fabric of spruce-root is woven the false embroidery or overlay twining of grass—the *uh-tah yark tu-twage* ("outside lifted up and put round").[1]

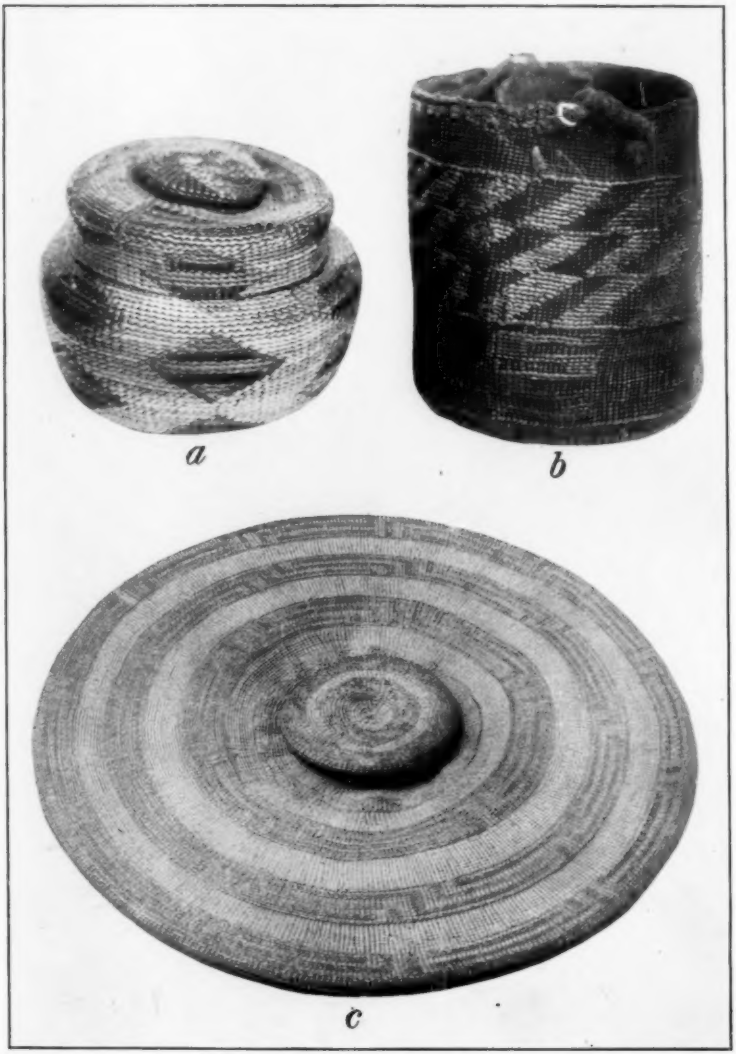
The embroidery begins where the warp turns up to form the side of the jar, and ends at the basal line of the neck. The design of the body, which is continued onto the rim of the lid, presents, when the latter is in place, six vertical rows of lozenges,—two and a half to the row,—each outlined by skipping two consecutive stitches in the overlay, thus permitting the dull-brown spruce-root twining to appear on the surface. Within this outline the false embroidery is continued—no longer in the sheeny pale straw of the *k[illegible]r shark* ("true straw"), but in a deeper, more brownish shade,[2] intersected by two longitudinal bars of black, each two rows of stitches in breadth.

The lid is surmounted by the ingenious closed chamber, containing the little pellets, whose rattle recalls to the native mind the sound of shifting pebbles on a shingle beach. This knob, 45 mm. (*c.* 1.8 inches) in diameter, is embroidered in the graceful fern-frond pattern (design 43, "the young fronds of the fern as they come up from the root and curl round"),[3] in two colors—the pale straw and the deeper shade forming the alternate fronds on the dyed spruce-root ground. The only portion of the spruce-root twining that is not in the natural color is this central or upper face of the knob. In all probability it was originally dyed red, though its hue is now dark-brown with only a suggestion of ruddiness. The

[1] Emmons, op. cit., p. 242. Also O. T. Mason in *Bull. 39, U. S. N. M.*, part P, fig. 28.

[2] The straw may be the same, but, if so, it has certainly been dyed and has faded. Its luster is not so high.

[3] Emmons, op. cit., p. 276.



a. COVERED BASKET, TLINGIT (Haldeman collection, A. N. S. P., No. 11477). *b*. BERRYING BASKET, TLINGIT (Schäffer collection, A. N. S. P., No. 11471). *c*. EMBROIDERED HAT (A. N. S. P., No. 11478)

three series of stitches forming the neck of the knob, and the three rows of the lid proper appearing just beyond the line of junction and under which the warp-strands of the former are inserted, are in ordinary twined weaving of uncovered spruce. Beyond this, the overlay recommences in solid blocks of pale straw, relieved by the "footprints of the brown (black?) bear" (Emmons' design 6).[1] Each of the three footprints is outlined in the dull spruce-root of the basal fabric, and within this lining of uncovered weft the overlay recontinues in the deeper shade and black, forming alternate bars, each two stitches deep.

At the base of the footprint series the warp-strands turn sharply down to form the cylindrical rim, and here the motif of the basket itself recurs in a series of alternating diamonds and triangles—the latter probably considered by the maker as the "half of the head of the salmon-berry," though in reality nothing more than a potential lozenge. This identity of motif on the body of the basket and the rim of its lid is in accordance with the Tlingit custom and serves as a recognition mark.

In form, weave, embroidery, and in two of the three elements of its ornamentation, the basket is characteristically Tlingit. It is unusual, though by no means unique, in the absence of strongly marked bands. Its peculiarity consists in the treatment of the lozenge, or "eye", which forms the decorative feature of the basket body and reappears on the rim of the lid. I know of no other Tlingit basket in which the lozenge is intersected by horizontal bars, and in this case it seems probable that the concept of the completed basket, with the barred footprints of the brown bear upon the flat surface of the lid, reacted upon the body motif, the "eye", to produce a design more realistic and harmonious. Yet it may well be that this is not an individual characteristic, but a lost or hitherto unrecorded pattern, and, as such, bears its special Tlingit designation.

A second art product from the same culture province is the tam-o'-shanter shaped hat figured on plate XVIII, *c*. Its greatest diameter is 419 mm. (*c*. 16½ inches). The head-band measures

[1] Emmons, op. cit., p. 265. Is the word "black" in the explanation of pl. v, fig. 5, merely a misprint for "brown"?

597 mm. (*c.* 23½ inches) in circumference and is 65 mm. (*c.* 2½ inches) in height. The hat is woven in the ordinary two-strand twining of the Northwest coast, with the stitches driven home so close and hard as to give a beautiful beaded appearance to the fabric. The edge is finished with the three-strand border (Emmons' border type 5)[1] frequently used for hats. The material is spruce-root, upon which an overlay is applied in concentric bands of "false embroidery" in straw of a rich golden-brown hue. The flat, button-like elevation of the crown, 108 mm. (*c.* 4.3 inches) in diameter, carries on its surface two bands of the "leaves of the fireweed" pattern.[2] The rhomboidal leaves are turned in opposite directions on these bands.

Then succeeds, around the slightly constricted, almost vertical neck of the knob, a series of solidly embroidered rectangles,[3] delimited above and below by a single embroidered line — "cross-

bar of the drying frame"[4] as shown in the figure. Beyond this constriction, the broad flare of the upper surface presents four spaced, concentric bands of embroidery. The innermost of these repeats the fireweed motif, the leaves being directed in accordance with those of the first circle. The remaining three, in conformity with the three worked bands of the piece's inferior aspect, show the well-

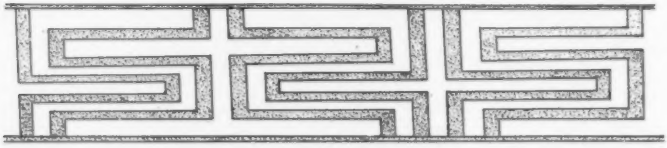


FIG. 27.—Design on hat-band. (A. N. S. P. no. 11478.)

known "shaman's hat" pattern.[5] The deep hat-band below is decorated with a variant of the "tattoo" figure[6] (fig. 27).

[1] Emmons, op. cit., p. 246.

[2] Ibid., p. 266, design 10.

[3] Possibly these blocks form nothing more than a variant of the fire-weed motif, though unnoted in Mr Emmons' text. See his plate XI, fig. 6.

[4] Emmons, op. cit., p. 269, design 20.

[5] Ibid., p. 274, design 36.

[6] Ibid., p. 273, design 35.

Unlike the example of this pattern figured by Mr Emmons,[1] the tattoo does not alternate with the simple "cross." In its individual parts it is rather an abbreviation of the old tattoo mark on the thumb than a variation of that on the metacarpals of the fingers. The result of the juxtaposition of paired units is, however, noteworthy, since the included figure thus produced is not, strictly speaking, the "cross," neither is it the tau-shaped ceremonial war-club nor its doubled art-form ⊥. A closer inspection will, I believe, reveal its connection with the "raven-tail" pattern.[2] Compared with that motif, it shows itself as the negative of a flattened and elongated but less ornate form of Mr Emmons' variant *a* of design 31 (figs. 29, 30).

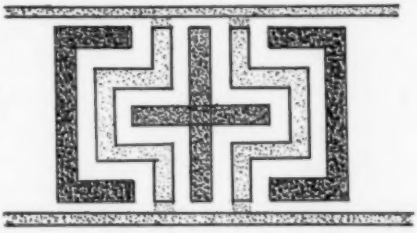


FIG. 28.—Raven-tail design, after Emmons' variant *b*, showing modification to cross design.

In the actual tattoo mark, the bars on the wrist, the double series of triple lines of dots on the forearm, which complete this personal decoration, show it to be a much conventionalized representative of a very ornate figure. In basketry this motif is always presented in double lines. So, too, the raven pattern exhibits line within line to the last degree of complication, and is (barring designs of modern introduction) practically the only motif of which this is true. Is all this mere chance? There is perhaps no more unstable and treacherous foundation on which to base the pillars of a psychic bridge than basketry design. And yet what is—or rather, was—

[1] Op. cit., pl. XII, 4. I am by no means convinced of the correctness of the identification of the cross, even in this instance, so long as it remains uncertain that the tattoo-cross explanation of the design on this basket was given by its maker. Individual license is broad, the tendency to experimental originality great. The slightest lengthening of a single recurrent line of variant B of the raven-tail pattern (loc. cit., p. 272) will, when placed between the characteristic delimiting lines—"cross-bars of the drying-frame"—produce a figure identical in outline with the embroidered bar on this basket. (Fig. 28.)

[2] Emmons, op. cit., pp. 272–273, designs 30, 31, and 32.

the symbolism of this figure, tattooed upon the back of the hand of some of the elder members of the tribe? If a connection be admitted between the tattoo mark and the raven, as this instance would tend to suggest, an hypothesis explaining the *raison d'être* of the tattoo mark is not far to seek. Not only is there a Raven clan,[1] but this bird assumes a paramount place in the daily life, the art, and the mythology of the whole people. Only one basketry design, it seems, bears the significant title *shon ghe-kulth kah ka'tch-ul-tee*, "old person's hand back of tattooed", and the original

FIG. 29.—Differentiated negative of design on hat-band, showing relationship to raven-tail design in fig. 30.

of that motif Mr Emmons has succeeded in discovering upon a single individual. But the former fact, while strongly suggestive, does not in itself force the conclusion that this was the sole symbol tattooed in ancient times. The Wolf clan may also have possessed its distinctive mark, yet to be discovered.

But, leaving aside this speculation, if the tattoo mark had no reference to the clan of the raven (since Mr Emmons declares it lacking in totemic significance, and merely a mark of distinction),[2] what better, more forceful way to express that tribal rank than by the symbol of the great god Yehlh, the raven?

Let me go one step farther and inquire as to the relation of the "ravèntail" motif to the individual from which it takes its name. Mr Emmons states: "In the minds of the people, it is unconnected with the preceding figure [the cross of the orthodox Russian church]. It seems to be purely symbolic in character, and bears no trace of resemblance to the natural object." By reason of his ancient office of "thunderbird," from which the eagle seems now to have dis-

[1] H. H. Bancroft, *Native Races of the Pacific Coast*, vol. 1, p. 109.

[2] Emmons, op. cit., p. 273.

possessed him, Yehlh, the raven, was ruler of the winds, and hence of the four quarters of the world. May I then suggest that in this conventional and ornate figure there survives the Tlingit cosmic symbol of the universe, with the cross of the winds in its center? Perhaps it is not mere chance that the apparently most complete, though by no means the most elaborate, of the three variants figured by Mr Emmons consists of the central cross and six enclosing borders, thus producing the cosmic seven which has entered so

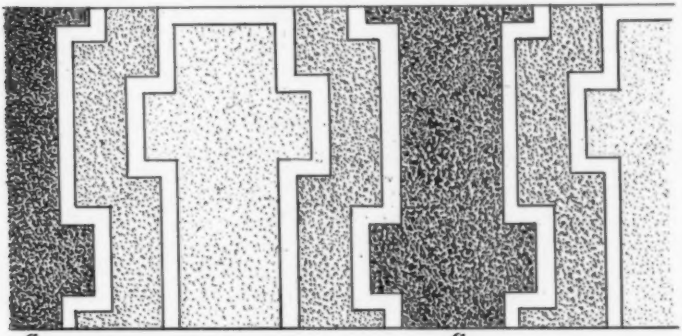


FIG. 30.—Raven-tail design, simplified after Emmons' design 31*a*.

largely into the esoteric thought of primitive peoples in the New as well as the Old World.

The hat above described appears to be very old, and was received by the Academy at some unknown date prior to 1876. It is peculiar both in decoration and form. Except in the matter of patterns arising from technique,—the skip-stitch, "hood of the raven,"[1]—the ornamentation of the Tlingit hat is produced by painting and not by embroidery. The example under discussion shows no vestige of paint, and, as stated above, is embroidered in rich golden-brown straw, and in designs typical of the art of this culture province. No other West coast hat of this form has been described, and the question unavoidably presents itself: Is this a genuine native creation, or a native copy of some foreign head covering?

[1] Emmons, op. cit., p. 241. Weave 3 and p. 268. Design 16.

To the student with a bias toward acculturation theories, the braid bonnet of some Scotch fur-trader immediately suggests itself as a model for imitation in straw—an ordinary sailor's hat would not explain the knob in the center of the crown.[1]

The alternative—a purely native creation—is one that may well be defended. Any study of the Tlingit head-covering involves an inquiry into the meaning and origin of the *khuke*, the tall ceremonial hat so conspicuous in their carvings. Its most striking feature is the series of woven cylinders rising above the truncated cone—a species of insignia of rank. Their origin is, I believe, unknown. In the lid of the little *tudar-huck* (pl. XVIII, *a*) occurs a similar cylindrical elevation, but in the covered work-basket the esthetic *raison d'être* of the hollow chamber is obvious. Although apparently no evidence, linguistic or otherwise, is available for the proof, I strongly suspect that, in native thought, the lid of the *tudar-huck* basket is regarded as its covering or hat, and it is quite possible that this little sounding basket lid preserves an earlier form and meaning of the excrescences on the Tsimshian ceremonial hat—a rattle. The multiplication of the cylinders, one above another, in a wholly natural attempt to express added dignity and importance, induced the retention of the cedar-block model as a guaranty of rigidity. This would, of course, abolish the rattle, the appeal for distinction being transferred from the ear to the eye. If this suggestion for the origin of the *khuke* type be accepted, the hat under consideration would then be seen to exhibit only the vestigial remnant of the original organ—the button-like elevation, open within, being neither a rattle, like that of the basket lid, nor a cylinder of the ceremonial hat.

It is evident that there is something to be said in support of an uninfluenced American origin, as well as in advocacy of acculturation.

In brief, the case stands thus: On the one hand, the specimen has a strong resemblance to a tam-o'-shanter magnified in straw;

[1] Dr C. Hart Merriam was inclined to see in it a copy of an old Russian hat, but I have been unable to find any Russian head-covering at all resembling this Tlingit piece, in any work on European costume.

on the other, a more flat hat was formerly in use on the Northwest coast; a basket rattle is still occasionally met with there; the *tudar-huck* was capped with a lid, bearing a flat cylindrical rattle; the cylinders of the ceremonial hat may be regarded as so many rattles, which, for technical reasons, no longer function; the Academy's Northwest coast hat is broad and flat, is surmounted by a hollow chamber, shaped like the rattle upon the basket lid, but open below like the *khuke* cylinders. Though the evidence is probably not all in, I trust the defence may be deemed strong enough to warrant a rendering of the old Scotch open verdict—acculturation "not proven."

Among the Tlinkit baskets forming a part of the collection of the late Dr Charles Schäffer, presented in recent years to the Academy, is one which calls for special mention (pl. XVIII, *b*). It is a *sahk-kah to'n-nar*, or small berrying basket (Mr Emmons' type 1) of spruce-root, dyed brown or weathered dark by age, and embroidered in natural and in golden-brown straw. Its rich tones are conspicuous among the gay hues of the more modern baskets. Dr Schäffer obtained it in 1888 in the neighborhood of Fort Wrangel, and it appears of considerable age, having undoubtedly seen service.

The basket has a height of 125 mm. (*c.* 5 inches) and a diameter of 107 mm. (*c.* 4¼ inches). Two loops of twisted deer (?) skin, placed upon opposite sides, serve for the attachment of the neck-cord. The border, a variant of Mr Emmons' border type 7, is produced by grouping the warp-strands into bundles of two and turning them down on the inside under the next weft-stitches, which, in this final series, are heavier and of twice the usual length.

Below this selvage, a line of embroidered dots is to be seen. The chief decoration consists in three bands of "leaves of the fireweed" separated from each other only by the single line, "cross-bar of the drying-frame," by which also they are flanked above and below. Beneath this triple band two examples of the thumb "tattoo" pattern are placed, one upon each side of the basket, below the above-mentioned suspension loops. These latter figures are in the darker, richer shade of the straw.

It remains to mention the peculiar feature of this small utensil.

The weave is a two-strand twining, but the direction is *from right to left*, while the stitch passes over and down to the left on the outside, then inward. It will thus be seen to be the ordinary Tlinkit "close together" weave, reversed in trend while the technique remains the same. This left-handedness of the maker (for that I assume it to be) has had the effect of reversing the slant of the woof-stitch, and, in consequence, that of the embroidery stitch as well. Though strongly and closely woven, there is a notable undulation of the stitch series and a lack of perfect symmetry in the basket's contour which seems not wholly due to warping. The selvage, too, while it does not lack strength, has a hummocky appearance, which indicates rather *gaucherie* than lack of care.

In marked contrast to this last is the exquisite little grass cup (pl. XIX). It is 101 mm. (*c.* 4 inches) high and has a diameter of 70 mm. (*c.* 2¾ inches), being cylindrical in form. The basket is not embroidered save in a single circumplexion marking the circumference of the bottom, the designs being wrought in the weft itself and consequently reappearing, in large part, on the less finished interior.

The warp element is so minutely divided and so closely covered as to leave its nature in doubt. The woof materials are a fine pale straw-colored grass, and, if I am not mistaken, the stem of the maidenhair fern. Whether any other grass enters into the wefting is uncertain: at least two other shades appear along with the pale straw color and the lustrous blue-black of the above-mentioned elements—a reddish brown and a yellow of a deeper hue—but, of these, the latter is probably due to dyeing the pale grass, and the former tones off into the purple-black of the stipe and may result from its natural range of tint. No difference of texture is distinguishable.

Three weaves have been employed in the creation of this masterpiece. The greater part is in wrapped twining. Three-strand braid or twining marks the transition from bottom to side, and in certain of the ornamental bands a combination of wrapped twining with *tee*, or lattice twining, occurs. The work proceeds from left to right. The number of stitches averages no fewer than six to the

GRASS CUP, LOWER VALLEY OF COLUMBIA RIVER

Haldeman collection, A. N. S. P., No. 11482

centimeter. Owing to the fineness of the weave, and an unusually heavy stitch of the root warp which crosses the center of the bottom, it has been found impossible to determine the manner in which the basket is commenced. Whatever that style may be, certain it is that the wrapped twined weaving makes its appearance as early as in the second series of stitches. The secondary or coil-warp strand,[1] which lies internally to the radiating primary strands, seems of the same root material as they. The lashing woof is pale straw.

Before reaching the circumference of the bottom, the first decorative motif is introduced—an **H**-shaped figure in black. Short lengths of fern-stem are used for the six figures, the stipe, after making its first turn to the exterior of the fabric to form the left leg of the **H**, is carried along internally to the secondary warp and wrapped with the pale weft element for three stitches, until needed again, then brought to the surface to form the second leg of the figure. Occasionally the thread continues along the back of the coil-warp strand and reappears in the succeeding figure. The pale straw is continuous, even in the circumplexion, wherein occurs the central bar of the **H** figure, for there it backs the coil-warp and so is wrapped with the fern-stem.

The boundary between bottom and side is marked and strengthened by the addition of two strands of the same fiber as the warp, the utilization of the coil-warp as a weft element alternating with the new strands in a three-ply twining or braid—the two being indistinguishable in a finished basket—and the employment of the grass and fern-stem as an overlay embroidery, three threads (one dark and two light) being used to face the fiber, their presence in the interior of the basket being detectable only along the edges of the short stitches of the interior aspect of the three-strand braiding of the fiber. Above this single circumplexion the wrapped twining recommences and continues into the lowest row of the first orna-

[1] As this strand is not of the grass, but of the same fiber as the radial warp, it would seem correct to consider it not as woof but as part of the warp, united by a single weft-strand, in place of the two weft-strands as in the *tee* weave. For this secondary warp element I suggest the name *coil-warp*. This coil-warp is used as a weft in only two places—the boundary line between bottom and side, and in the construction of the selvage.

mental band. This black band (fig. 31, *a*) is bisected horizontally by a line of pale straw. Within its divisions, thus formed, a pleasing arrangement of double and single diagonal lines is woven in pale straw. These dip at opposite angles, converging toward the left, and are unevenly spaced, being separated now by one, now by two,

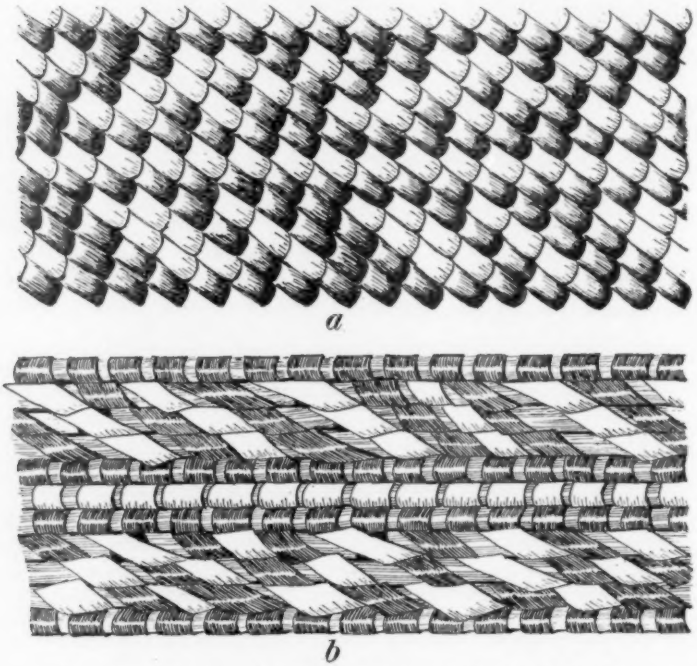


FIG. 31.—(*a*) Exterior and (*b*) interior of ornamental band on basket cup. (A. N. S. P. no. 11482.)

stitches of fern-stem, but nevertheless corresponding in the upper and lower halves of the band.

The technique whereby these diagonal bars are produced is a combination of bird-cage and lattice-work, and may be best understood by reference to the illustration (fig. 31, *b*). The *tee* stitch is employed where straw and stipe succeed one another; the wrapped

twining is used wherever two consecutive stitches of the same color are desired. The vertical stitches of the latter show but rarely on the interior of the basket, being overlaid by the alternate thread, carried along diagonally to its next outward turn. The inner face of this portion of the band thus presents only slanting stitches in alternate colors and varying lengths. The secondary, or coil-warp, strand is often visible in their interstices, and the basket-wall is perceptibly thickened by the additional lashing. The center and margins of the ornamental band are in the ordinary wrapped twining.

Eight rows above this band, a second series of H-shaped figures commences. Their construction does not essentially differ from their homologues on the bottom. Both the red-brown thread of the figure and the pale straw of the pseudo-background, when not in use, are continued under the lashings of the other element, except at the crossbar of the H, where the light thread is carried in long stitches over the vertical inner turns of its alternate.

The second ornamental band corresponds in design and weave with the first, but the pale straw is replaced by a light amber and the purplish black by a red-brown tone.

The succeeding light field is broken by a new motif. The first of these figures completed by the textile artist—that lying immediately to the right of the transition line[1] of weave—is a recumbent I identical with the upright figure previously described, but this would appear accidental, for, in all of the remaining thirteen individuals, the upper horizontal line has been shortened by one stitch at each end, and the result is I. The figure is in red-brown, and is woven in the same way as the H.

A third ornamental band, of the same weave and pattern as the bands previously mentioned, begins in red-brown tones, but its central and upper portions are in the lustrous purple-black. The median line and diagonal bars are, like those of the first band, in pale straw. While the general aspect of the design in all three

[1] I am not aware of any designation now in use for this well-marked line from center to circumference, which indicates the completion of each row—a circumplexion—and consequently the transition from one figure to the next.

bands is the same, the second and third lack that close adherence to symmetry in the parts above and below the median line which characterized the earliest example.

Immediately below the selvage, against a pseudo-background of light amber, sixteen little black "dogs" turn their noses to the right and plant their legs upon a single line of fern-stem stitching. These tiny creatures have the simplest outline imaginable. The designations "dog" and "horse" are given by natives to similar creatures on modern baskets, but these might be deemed any quadruped of the Pacific watershed. They are built in the combination wrapped twining and *tee* previously described.

The basket finishes in a selvage produced by a row of two-strand twining of the same substance as the warp fiber, probably in part a continuation of the secondary or coil-warp. The end of each vertical warp-strand is bent outward, then forward and downward, crossing the face of the next warp-strand, whereupon it passes under the two-ply twining, by which it is held down, and penetrates between the warp-threads to the interior, where it is trimmed close. The result is a strong and pretty border of false braid (fig. 32, *a*, *b*).

This little cup was collected by Thomas Nuttall, the botanist, in his famous trip across the continent in 1834, and given by him to Mr S. S. Haldeman in 1836. On the latter's death it was presented to the Academy. Its tribal affinities will be discussed in connection with the basket wallet, next described.

A fifth basket from the West coast of America, meriting especial attention, is a flat bag or wallet (pl. XX, *a*, *b*), rectangular in form, and having a length of 405 mm. (*c.* 16 inches) and a depth of 254 mm. (*c.* 10 inches). The greater part is in ordinary two-strand twining of cedar (?) root upon a warp of the same fiber, though in no spot except the first line of sewing at the bottom and the selvage at the top does the material of the basal fabric appear upon the outer surface. I say in greater part, since, in the production of two of the ornamental elements, the textile artist has seen fit to change the technique, substituting a special modification of the bird-cage or wrapped twining for the usual twining; but this will receive consideration under the head of embroidery, since it is the decorative motif that has forced the change.

BASKET WALLET—A, OBVERSE; B, REVERSE

A. N. S. P., No. 11483

Unlike the Nez Percé basket wallet described by Professor Mason,[1] the vertical warp-strands are not continuous over the lower edge of the basket to form the sides, but appear in two sets, one for each face, held close and bound firmly together by a two-strand twining of cedar (?) root. This twining sometimes passes around a single group of the warp-threads (two strands), again it

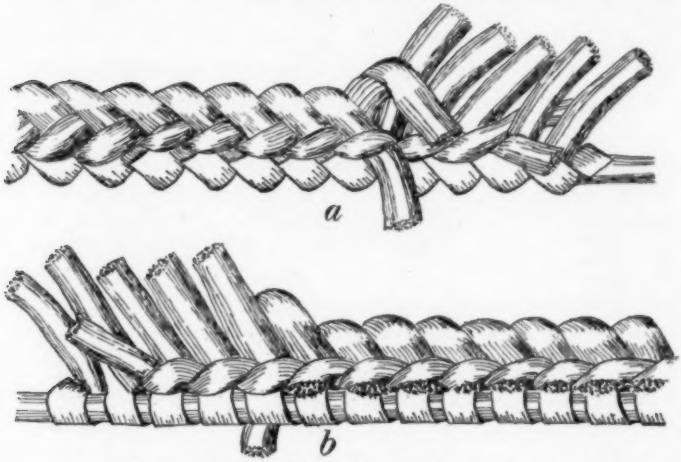


FIG. 32.—Exterior (*a*) and interior (*b*) of border on basket cup. (A. N. S. P. no. 11482. Enlarged 5 times.)

encloses two groups (four strands), two from each face, but it is always simple twining and does not differ upon the two faces of the basket. The warp-threads, after the completion of the work, have been trimmed close to this strong stitching, which is further enforced by eight rivet-like cords passed through the double weaving just above it and firmly knotted close upon each side. At each extremity of the warp series, and laid parallel with its strands, is a bundle of the same material, about eight-fold the size of the ordinary warp bundle. This is designed to become the lateral selvage of the basket.

The weft, commencing above the fundamental line of stitching,

[1] *Smithsonian Report for 1884*, pt. II, p. 301, pl. XX.

passes from left to right and is overlaid with bark and straw embroidery. Upon reaching the lateral selvage bundle, the woof-strands, together with the embroidery element, encircle the bundle, thus whipping it fast, and the twining recommences on the other face of the basket, but with a changed scheme of ornamentation.

The selvage at the top is preceded by a line of simple twining,[1] almost every stitch of which encloses two of the vertical warp-strands. As this circumplexion is covered by an embroidery of alternating stitches in brown and pale straw, a pretty beaded effect is produced below the braid-like selvage. This latter is an ordinary two-ply twining of cedar (?) root into which are caught the kindred warp-strands, mostly gathered in two-strand groups by the preliminary weft series. The warp bundles, now uniform in texture and thickness with the heavy woof-strands of the border, are turned outward, forward, and downward,—i. e., to the right as seen from the outer surface of the fabric—across the succeeding warp bundle, are caught under the final twining and pass to the interior surface, where the ends are turned down. As the woof-stitches slant upward to the right, and the warp, thus bent upon itself, is inclined to the right, a strong and pleasing border of false braid is produced.

The difficulty of determining the direction of the weave in a basket with the form and facial diversity of this wallet was further enhanced by the perverse turn of the warp-thread. Were the basket woven from right to left, as in the Tlingit berrying basket described above, the woof would have corresponded, in all other respects, with the two-strand twining, and the border presented the appearance of the border type 7 described by Mr Emmons. However, a most careful tracing of individual woof-threads, singled out by some peculiarity, was sufficient to distinguish definitely this border from its analogue among the Tlingit, and conclusively prove

[1] This appears to correspond in every respect with the first line of stitching at the bottom, but owing to the entire concealment of the inner aspect of the former beneath the turned-down ends of the warp, it is impossible to speak with certainty; but the fact that a shorter stitch, spanning a single warp-strand, occasionally intervenes, and that the stitches do not overlap, is all but positive evidence that no three-strand twining is herein concerned.

that the trend of the weave is from left to right, and the slant of the stitch aspiring.[1]

The heavy lateral selvage bundles are cut off 38 mm. (*c.* 1½ inches) above the finished basket-top, and each wrapped around with the embroidery element for a finish and bent inward and downward, in a stiff curve, into the corner, where it is held in place by a strong stitch which passes through the weave from one face of the basket to the other, below the selvage, and is carried over the edge to be securely tied.

So old is this piece of native art that its colors have faded to tones of cream and brown. Especially is this true of the obverse, while the reverse, which has been less exposed to the light, retains somewhat of its black and yellow. Fortunately it is possible, by examination of the interior of the basket, to reconstruct its color scheme. There, the projecting bits of straw, carefully turned down, announcing the commencement of an overlay thread, or marking the beginning of a figure, show that the fabric was once radiant in hue—black, chestnut brown (or red?), golden brown, pale straw (or white?), and yellow that lies between a sulphur and a gosling-green.

With the exception of that design and portion of a design to be noted later, the embroidery or overlay is produced by a simple twining of two grass strands overlaying the basal fabric. Hence it presents to the eye a grass stitch with the same dip as the weft-strand which it completely conceals, and by which it is, in turn, concealed on the inner face of the fabric. In one or two instances the two-strand overlay is continuous across a figure and the single stitch in a third tint necessary to the design would seem to be superimposed upon the overlay.

The decorative scheme of the obverse (pl. XX, *a*) begins at the bottom with a band of chestnut brown. A black strand is introduced near the starting point of the first row, to alternate with the brown, but quickly dropped for the uniform tone. It reappears,

[1] Were additional evidence required, it is to be found in the characteristic forward creep of the warp-strands, where the bird-cage weave is used—best seen on the reverse face (pl. XX, *b*) and the crowding of the figures to the right hand on the obverse face (pl. XX, *a*).

however, near the end of the third, and is present across the whole width of the fourth, the final row of the band, giving it a beaded finish. Above this appears the pale, almost white, straw, which, crossed by five triple bands and framed to right and left by a border of brown, is to form the theoretical background for the figures.

The first division of this field contains three shapes, resembling our conventional representation of the feathered end of an arrow-shaft, alternating with two masks. The latter are set so low that the mouths impinge upon the border below. Eyebrows, eyes, nose, and mouth are worked in the pale natural straw, boldly outlined upon the brown surface of the octagonal mask. Horizontal bands of tattooing, or paint, cross the face—a series of black stitches, alternating with the lighter brown of the ground tone, extends across the mask at the central line of the mouth; a broad band, solid black in the upper and the lower row and barred within, diagonally upon the right cheek, vertically upon the left, marks the area between the basal line of the nose and the central line of the eye in the left-hand mask, while the face to the right shows between the solid boundaries only a single line of dots (alternating stitches); a double row of alternating black and chestnut-brown (red?) is intersected by the apices of the brows; above this the forehead shows another band, two rows deep, black and reddish strands being twined with the lighter brown in the lower and upper rows respectively to form a chevron pattern.

The other class of figures in this field, as seen in the example in the middle, can be best described as two horizontal rhombs, tending in opposite directions, and placed with their long sides in contact. These are in the lighter brown. The six smaller and vertical rhombs within this figure have been embroidered in the greenish yellow straw. The dark bands of facial decoration upon the masks reappear in corresponding bars across the brown portion of the arrow-feather also.[1] The representatives of this design, to the right

[1] This rhomb symbol is termed, in the present paper, the *arrow-feather*, for the sake of convenience only, not to imply any relation, in the mind of the basket-maker, between the motif and the feathered shaft of an arrow.

and left, have been modified by proximity to the lateral brown borders, the former losing its V-shaped indentation by blending with it, while the latter adds a fourth yellow rhomb to its upper series, and encroaches upon the margin so as to reach even to the selvage bundle.

The lowest field is terminated above by a triple band, dark (alternate brown and black) above and below, and pale straw in the middle line. To this succeeds an unbroken strip of the cream-colored embroidery, and above this is a second triple band, slightly broader than the first and with the central rows in greenish yellow.

Upon the second triple band rest the chins of the five masks of the second occupied field. They differ from the two above described in the possession of an ornamental cap, or head-band, in their greater breadth, and in the tattooing.[1] The row of paint, or tattooing, crossing the median line of the mouth, is in solid black; the band at the basal line of the nose is narrower; the stripe across the forehead commences immediately above the eye and reaches, in its breadth, the apices of the eyebrows. Three rows of stitching higher appears the head-band, vertically barred in cream and chestnut-brown.

Two triple bands, similar to the second and separated by an unbroken field of natural straw, intervene between the second and the third occupied field—a field differing in no way from the former, save in the tattooing (painting) of the masks. Here the lowest horizontal stripe lies between the upper line of the mouth and the base of the nose, and consists of two rows of solid color, bordering one of alternating dark and lighter brown. In the first or left-hand mask a similar band seems to have crossed the face athwart the eyes, but if such a beautification ever existed on the other four masks, it must have been in paler tones, since the corresponding stitches present an even lighter brown than the remainder of

[1] It may be worth while to note that the peculiar type of tattooing practised in western and northern America, a type for which I have suggested the term *kakina* (*Science*, N. S., XIV, p. 776), where a needle with pigment-charged thread is drawn under the outer cuticle, is obviously derived from the textile arts, and can most easily have been suggested by the practice of representing the earlier painted facial decoration in applied stitches upon basketry.

the surrounding surface. The whole of the forehead, from the root of the nose to the ornamental head-band, is occupied by a decoration in alternating stitches.

In all the twelve masks woven upon this remarkable basket, the eyebrows are strongly arched in the form of ᗑ. From the central depression depends the straight line of the nose. The eyes are hollow squares, sometimes (though that would appear accidental) occupied by a black stitch (the pupil?). The mouth in all of the upper series and in all save the last (the right-hand) of the middle group, is a parallelogram. In the case of the exception noted, only the central two of the four stitches on the base-line of the rectangle are present—an exact reversal of the method of representing the mouth in the first mask of the lowest row, where the upper, not the lower, lip assumes the pseudo-curve. In the other mask of this first row, the four corner stitches in the parallelogram have been omitted and the result is the technical oval. It seems as though the artist had experimented with this feature.

There is one marked peculiarity visible on the obverse face of the basket, that, while every individual figure, and indeed each feature, is created separately by short sections of straw, prominent bands, like the tattoo lines on the masks, reappear in the lateral brown borders. There is no obvious reason for their insertion there, nor indeed for this carrying over into the "arrow-feathering" design of these same bars. Expectancy, familiarity with another and more primitive technique, would appear to have brought this to pass. Either the basket-maker was most familiar with baskets of wrapped twined (bird-cage) weave, where the darker element, when brought to the surface, would inevitably show the black in such a row quite across the whole width of the fabric, or the basket was more or less freely copied from such an one.

Upon the triple band which bounds the third occupied field above, eight little brown "dogs" stand facing to the left. Their anatomy can be best understood by reference to plate XX, *a*. The last dog has apparently been induced, though not compelled, to carry his tail aloft, by the proximity of the lateral brown border. A curious change of weave occurs in the lower row of weft entering

into the bodies of the dogs, and the row immediately preceding it. It is no longer a matter of two-strand twining, overlaid by a two-strand false embroidery, but of three-strand wrapped twined weaving. In this weave a single cedar (?) root weft-strand (i. e., the coil or secondary warp) passes along behind the vertical warp threads, to which it is lashed by two grass strands—one light, one dark. In the upper of these two rows the light grass thread starts off in simple, wrapped twined weaving, with characteristic stitches, diagonal on the right side and vertical on the wrong. After some ten stitches the dark thread is introduced, and the same wrapping is continued with it, the first, or light, binder being carried along on the back quite free until the end of the dog's body is reached, when the light thread is brought to the front, and the process repeated with the dark grass loosely trailed in the rear. The preceding weft series does not present so simple a technique. The spaces between the dogs' legs break the continuity of the dark weave, so that alternating bits of color are desired in parts. Here the dark thread, after its introduction, makes but a single turn on the face of the basket and then gives place to the light strand, which is carried up diagonally at the back across both root woof and warp and brought through to the fore. This lattice weaving continues so long as alternations of the two colors are required, but as soon as the pale field is regained it is replaced by the ordinary bird-cage weave in the light straw, with the brown strand laid free on the inner side of the basket. Above these two rows, the ordinary twined weft and twined overlay recontinue to the selvage.

The reverse face of the basket (pl. XX, *b*) bears scant resemblance to its obverse. True, the creamy straw forms the apparent background here also, the lateral brown borders skirt the selvage bundles, and the procession of little "dogs" crosses the top, but there the likeness ends.

Above the fundamental cedar (?) root stitching, the two-strand twining commences, with two-ply twined overlay in brown. This row is followed by two lines of yellow and brown stitches alternating, and these by two more in yellow and black, and a fifth in yellow and brown. A band of brown with black strands of varying lengths

appearing irregularly in alternating stitches is topped by three rows in pale straw. After two series of solid brown stitches—the commencement of the first ornamental band—the weave changes abruptly. The decoration is a series of yellow triangles, each with its apex in the center of the base of its right-hand neighbor, and to produce this design the basket-maker has resorted to the peculiar combination of the wrapped twining with the twined weave, known as *tee*.[1] Three rows of this interesting adaptation of technique to figure border two lines of ordinary wrapped twined weaving above and below, and then the band is completed by two rows in the

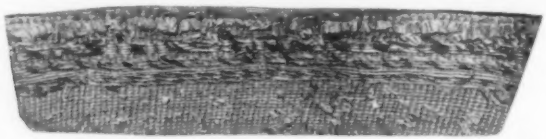


FIG. 33.—Inside aspect of part of the upper ornamental band and border of the basket-wallet. (Reduced.)

usual twining with the two-strand twined overlay in brown (cf. fig. 33).

A narrow band of brown breaks the continuity of the pale straw two rows above the first decorative stripe. The second ornamental band, broader than the first, contains a regular parallel arrangement of step-like lines in brown and yellow. Stitches of black alternating with the brown along the edges and here and there throughout the figure give a twilled effect to the design.

After a short interval a third ornamental band has been woven in similarly to the first, in the substituted combination weave. It is, however, broader, and its triangles point to the left. The motif of the second decorated band recurs in the fourth, while the fifth corresponds with the third. A peculiarity of the three ornamental bands with the triangular motif is the rectangle upon which the apex of the foremost triangle impinges. This is obviously an essential part of the design, since it occurs at the end of the lower

[1] The horizontal strand, or coil-warp, in the fabric here considered, as well as in the basket-cup described above, lies behind the warp-threads, not before them, as with the Pomo creations.

series, which points to the right, and at the starting of the middle and upper series which are directed to the left in all cases there was sufficient space to weave another triangle.

The procession of little "dogs," standing upon this last band, all face to the right, except the last to be completed. This remarkably lean individual, with tail in air, confronts the foremost of the advancing line. These little animals are not so realistic as those upon the obverse. The four rows of stitches which enter into their stick-like legs are in the combined wrapped twined and *tee* weaves (fig. 32). The regular two-strand twining with two-strand twined false embroidery recommences in the body and continues to the selvage.

The form of this basket-bag or wallet plainly shows its relationship to the flat skin pouch, from which it would appear to have been derived. Mr Teit has described bags of this shape from the Thompson River Indians (Salishan stock) which are of an even more primitive type, being made from a piece of matting, folded over, and sewed up at both sides with a piece of deerskin.[1] The wallet accredited to the Nez Percés, and figured by Professor Mason, gives a further step in the evolution of this form. There, the warp-strands of the sides are continuous across the lower edge of the bag, just as in the Thompson mat-pouch, but the weaving commences at its bottom in the center of the warp-threads, and after these have been firmly tied together and bent upward, the twining proceeds round and round the fabric.

In the bag herein described it is difficult to tell whether the change is an improvement or the reverse. The advantages of the strong, continuous warp over the parallel structure with the rough ends trimmed close to the twining are, perhaps, more than balanced by the additional stay of the rivet-like cords, and a freedom from the danger of breakage due to the sharp bend of the warp-strands.

This type of flat basket, so little adapted in form to primitive household needs, does not seem, despite its simplicity of outline, to be widely distributed. It could have come into vogue only as the

[1] James Teit, The Thompson Indians of British Columbia, *Mem. Amer. Mus. Nat. Hist.*, vol. II, p. 201, fig. 149.

successor of the skin receptacle, and at such points where skins were more difficult to obtain than the vegetable fibers, so cunningly and laboriously wrought into its structure.

It would appear to be most frequent among tribes of Salishan and Shahaptian stocks. As noted above, the Thompson River Indian basket-wallet is a modified mat, and another Salishan tribe, the Quinaielt, weave their wallets with a horizontal warp and vertical weft,[1] thus showing, in yet another way, the relationship of this form to the mat and earlier skin bag. The Shahaptian wallet is built upon quite another principle, the basket being commenced in the middle of the line of warp-threads, continuous over both faces of the basket, whereafter it is woven round in the usual way.[2] The one here described is, I believe, peculiar in its structure—the treatment of the trimmed and riveted bottom, and the lateral selvage bundles, both of which characters tend to reduce its capacity and general usefulness. The lateral selvage has the appearance of copying in textile the leather binding of such a wallet as the Thompson Indians construct.

In its weave it is also unusual: the two-strand twining whereby the greater part is built up is of wide distribution, but the treatment of the overlay is not that of the Salishan tribes, which possess wallets resembling this. The Thompson Indians wrap the decorative filaments about both elements of the twine, thus revealing the design upon the interior.[3] On the other hand, the Shahaptian Nez Percés do not carry the embroidery thread to the interior, but pass it beneath the exterior aspect of the weft-stitch.[4] In the Academy's basket, however, the decorative element, while not appearing on the interior, save as free ends marking the beginning and completion of a figure, yet passes the stitch behind the vertical warp-strands but is concealed by the stitch of the fabric along which it lies.

Of the other weaves that enter into this basket, the wrapped

[1] Mason in *Ann. Rep. Smithson. Inst., 1902*, U. S. N. M., pp. 264 and 435.
[2] Ibid., pp. 437–438.
[3] Ibid., p. 325, pl. 78, figs. 1–4.
[4] Ibid., p. 438 and fig. 139.

twining is a technique of limited distribution, being known only from Washington and the ocean side of Vancouver Island, among the Wakashan, Salishan, and Shahaptian peoples.[1] The *tee*, or lattice-twined, weave, is yet more circumscribed, having been reported only from the Pomo Indians of California. A characteristic of the Pomo *tee* weave is the location of the horizontal or coil-warp in front of the vertical or radial warp,[2] while in the wallet and the cup here described it lies on the interior of the basket. As this is a trait of the wrapped twined weaving which builds up the major part of the cup and certain bands of the wallet, the relative positions of the two warp elements have been conditioned by the latter weave. In fact, the lattice weave may be regarded, in this instance, as evolved out of the wrapped twined weave by the action of decorative necessities.

The type of border exhibited by this basket, I have nowhere seen figured or described. It has a certain affinity to that of the Quinaielt wallet collected by Mr C. C. Willoughby and described by Professor Mason,[3] but it is not identical, the direction of the weave being reversed, and the warp-strand bent *forward* (not backward) *in front* of its neighbor (not behind), *under* (not over) the stitch of the two-strand twining, before turning inward. This border will be seen to be identical with that of the cylindrical basket cup described above, with the exception that, in the latter, the warp-strands are used singly, while in the former they are usually grouped in pairs and treated as a unit.

Turning to the designs represented on the wallet, the "arrow-feather" figure may be considered as a possible variant of the ornamental bands upon the cup. The faces or masks are characteristic Chinookan in presentation,[4] though they differ somewhat from those shown on Wasco baskets, the eyes being placed horizontally, not diamond-wise.[5] The horizontal bands of triangles upon the reverse face of the wallet occur as a motif, but placed

[1] Mason in *Ann. Rep. Smithson. Inst., 1902*, U. S. N. M., pp. 235–236.

[2] Ibid., p. 237.

[3] Ibid., p. 264.

[4] Ibid., p. 439, pls. 168, 169.

[5] The University of Pennsylvania possesses, I believe, a Nez Percé wallet covered with octagonal faces, but I have not been able to examine it.

vertically, on Salishan and Shahaptian basketry,[1] as upon that of certain unrelated California tribes. The two bands of parallel stepped lines suggest the shaman's hat pattern of the Tlinkit. Simple as is the motif, and frequent of occurrence, upon the basketry of other people, it is almost invariably presented in aspiring series. The little animals that trail around the top of this wallet, and of the cup also, are characteristic of the textile art of the Skokomish and other Salishan tribes, as the Clallam and the Quinaielt.[2] The design is also known to the Klikitat, a Chinookan tribe formerly living near the Dalles of the Columbia.[3]

It will thus be seen that, in peculiarities of weave and of border, the basket wallet and cup agree, as also in the arrangement of the decoration in horizontal bands, and partly in the motives employed. There can be little question that they emanate from the same tribe. The cup is recorded as from the Pacific coast; the wallet has long been without data. It was formerly assigned to the Pacific islands and placed with Hawaiian ethnographica. This, and the silence of the old accession lists regarding its acquisition by the Academy, would seem to indicate the probability that it came with the Nuttall and Townsend collections. Owing to the several voyages of Nuttall and Townsend between the mouth of Columbia river and the Hawaiian islands, and thence around the Horn, some specimens of their collecting have been found erroneously assigned, which makes even greater the probability that the wallet was also part of the treasure trove of this expedition.

The travels of these scientific explorers were confined, in the West, to the valley of the Columbia, with brief trips into its tributaries and along the contiguous coast; there they met with natives of the Wallawalla, Nez Percé, Chinook, Klikatat, Kallapooyah, Cowlits, and Cayuse tribes.[4] It was with the Chinook, however, that they were longest and most intimately associated.

[1] Mason in *Ann. Rep. Smithson. Inst., 1902*, U. S. N. M., p. 324, pl. 76; p. 438, pl. 161.

[2] Ibid., p. 436, pls. 51, 162, 164, 165.

[3] The American Museum of Natural History possesses a Klikitat basket bearing this design (no. $\frac{50}{1526}$), collected by Dr Livingston Farrand in 1900.

[4] John K. Townsend, *Narrative of a Journey across the Rocky Mountains to the Columbia River, and a Visit to the Sandwich Islands, Chili*, etc., 1839.

It is evident that, in the textile art, Chinookan, Salishan, and Shahaptian peoples have shared with one another, and from present knowledge it is impossible to assign the basket wallet and cup to any given tribe. They are, in a sense, *sui generis*, and yet essentially a product of the lower Columbia valley.

THE ACADEMY OF NATURAL SCIENCES
PHILADELPHIA, PENNSYLVANIA

NOTES ON THE ANCIENT ART OF CENTRAL AMERICA

By GEORGE GRANT MACCURDY

WHILE I was attending the centenary celebration of The Academy of Natural Sciences of Philadelphia, Miss H. Newell Wardle of the Academy's museum staff called my attention to a small stone amulet (fig. 34), she having already noted its similarity to certain specimens illustrated in my recent work on Chiriqui.[1] This amulet, number 4433 in the Academy's ethnological catalogue, was collected by a former member, Mr William M. Gabb, whose widow presented it to the Academy in 1879.

FIG. 34.—Stone amulet formerly used by the Indians of Talamanca, Costa Rica. (½)

The item accompanying the specimen and signed by Gabb is as follows: "Formerly used by the Indians of Talamanca as an ornament (or necklace) and also as money. The art of making these now seems to be lost." The figurine is carved from a stone of rare and attractive color, cut so as to reveal white and red coralline bands. The hardness is 4 and the specific gravity 2.55. The acid test reveals the presence of calcite. The material is considered by Professor William E. Ford to be an impure limestone.

The Indians of Talamanca occupy southeastern Costa Rica and the territory to the eastward as far as Almirante bay. The principal tribes are the Bribri, the Cabecar, the Uren, and the Tiribi. From which of these tribes the specimen in question was collected Gabb does not say. It is of special interest as being a good example of a figure in one medium being executed in a technique that belongs to another medium. In other words, the artist

[1] A Study of Chiriquian Antiquities, *Mem. Conn. Acad. Arts and Sci.*, vol. III, 1911.

working in stone has borrowed the technique of the goldsmith. This is seen in the flattened feet which give the effect of having been hammered; also in the conventionalized alligator heads attached to the head of the frog. The transverse perforation through the neck is not visible in the dorsal view.

An example of the metallic type of frog carved in resin, from Divala, Chiriqui, was figured in my volume previously cited. Unfortunately the flattened feet are broken away (fig. 35). There is a ring for suspension under the throat. This specimen also served as a neck ornament, and, like the stone figurine collected by Gabb, may have been used in lieu of the more precious figurines of gold.

FIG. 35.—Figure of a frog carved in resin; from Divala, Chiriqui. Lamson collection. (½)

The use of the conventionalized alligator and alligator head as a decorative and symbolic motive, particularly on metal figurines, was quite common in ancient Chiriqui as well as in Costa Rica. An example resembling the specimen belonging to the Philadelphia Academy but made of base metal is in the William J. Lamson collection of Summit, New Jersey. In the latter the conventionalized alligator heads are rendered more easily recognizable by the presence of the teeth and eye as well as the recurved jaws (fig. 36).

FIG. 36.—Base metal casting of a frog; the head is adorned with two conventionalized alligator heads. Lamson collection. (½)

The head and body of the alligator are sometimes employed in place of the head alone. An example is to be seen in a gold figurine belonging to the Metropolitan Museum of Art, New York City (fig. 37). Here the figure as a whole is an alligator; its

four feet are replaced by alligator heads and out of its mouth protrude two conventionalized alligators armed with prominent dorsal spines.

The favorite metallic type of alligator symbol consists of two heads united by a common body. In such cases the common body, as well as the fore legs, is often undifferentiated, being left as a plain flattened bar attached to the head, or both head and feet, of some deity. This is well illustrated in a parrot-god and two jaguar-gods, all belonging to the Minor C. Keith collection. In

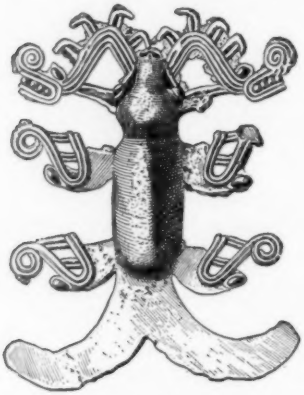


FIG. 37.—Gold figurine ornamented with alligator motives. Metropolitan Museum, New York. (⅔)

FIG. 38.—Gold figurine representing the jaguar-god with an alligator motive serving as headdress; from Rio General, Costa Rica. Keith collection. (⅔)

figure 38 it is quite evident that the bar and its curved extensions represent the multiple alligator motive. The dorsal spines on the common body are placed ventrally for technical reasons. In figure 39 the motives at both head and feet are plain flattened bars undifferentiated except for a row of triangular perforations representing the dorsal markings of the alligator.

That isolated examples of the ancient art of Chiriqui and southern Costa Rica should be found among the modern tribes of that region is not surprising. In his paper "On the Indian Tribes

and Languages of Costa Rica"[1] Gabb says that the Talamanca "chiefs on great occasions wear gold ornaments, similar to those now found in the *huacas*, or graves of Chiriqui. Whether these have been recovered from some of these graves, or whether they have been handed down from time immemorial is not known." This is no doubt also true of the stone figurine collected by Gabb and now in the museum of The Academy of Natural Sciences of Philadelphia.

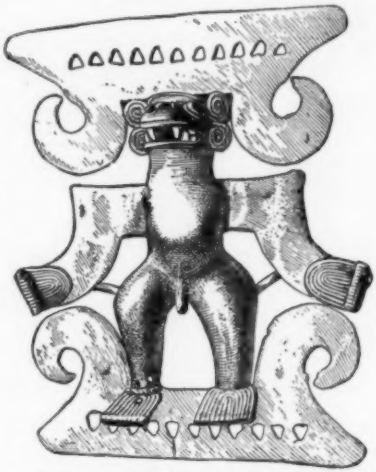


FIG. 39. — Gold image of the jaguar-god. The perforated bars at the head and feet are alligator motives; from the Huacal de los Reyes, Rio General, Costa Rica. Keith collection. (⅔)

With the Lamborn collection there came to the Philadelphia Academy in 1900 a small Chiriquian collection which includes a diminutive clay metate or seat (cat. no. 3928). This specimen, which belongs to the plain terra-cotta or armadillo ware, is without ornament of any kind. It is only about ten centimeters long; in shape it corresponds rather closely to the stone metate[2] of moderate size given to the Yale University Museum by Mr Edwin Lamson, of Summit, New Jersey. Instead of the customary four legs, each is provided with a pair of parallel continuous supports extending nearly the full length of the plate or seat. This type forms a connecting link between metates on the one hand and stools on the other.

Stone of suitable quality and attractive appearance has always been a favorite material out of which to fashion amulets and ornaments. Resin is a medium much less frequently employed. Al-

[1] *Proc. Amer. Philos. Soc.*, vol. XIV, pp. 483–602, 1875.

[2] Op. cit., fig. 21.

though easily worked and of an attractive color, these qualities are more than offset by its rarity and friability. For even more cogent reasons one would not expect to find ornaments made of clay. Where such do occur, however, one might expect to find them in the guise of ornaments in some other more appropriate medium.

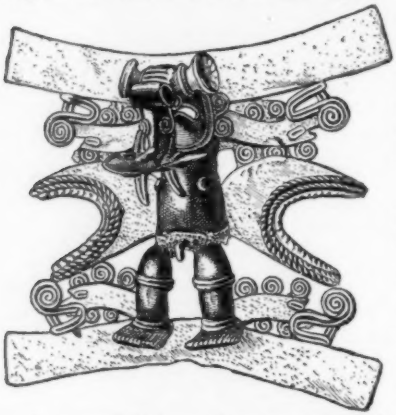


FIG. 40.—Gold image of the parrot-god with alligator motives at the head and feet. Keith collection. (½)

Recently Professor Jorge Engerrand of the Instituto Geológico de México called my attention to the remarkable similarity between a prehistoric clay plaque or gorget from Venezuela described by G. Marcano,[1] and a Chiriquian gold plaque from the George G. Heye collection.[2] The repoussé ornamentation of the clay plaque (fig. 41,

a *b*

FIG. 41.—Clay plaque from Venezuela. After G. Marcano.

[1] Ethnographie précolombienne du Venezuela, *Mém. Soc. d'Anthrop. de Paris*, 2e sér., t. IV, 1893.

[2] Op. cit., fig. 379.

a, *b*) consists of four large embossments (instead of five), with a single circle (instead of two) of raised points surrounding these and near the margin. The two holes for suspension coincide with this circle. The resemblance between the clay plaque and the one of

FIG. 42.—Gold plaque from Chiriqui, Panama. Heye collection. (½)

gold (fig. 42) is so pronounced as perhaps to justify the assumption of a genetic relationship and of the replacement of one by the other as the exigencies of the case might demand. In like manner may the stone and the resin figurine each be looked upon as a substitute for gold figurines which they are made to resemble so closely.

YALE UNIVERSITY MUSEUM
NEW HAVEN, CONNECTICUT

THE CREEK INDIANS AS MOUND BUILDERS

By JOHN R. SWANTON

NEAR the southern edge of the old Creek Nation, Oklahoma, five or six miles from Indianola and between that point and Eufaula, is an earthwork which has all the marks of considerable antiquity. It lies upon high ground a few miles distant from Mill creek. A narrow lane divides it near the middle, leaving part in a cotton field and part in a strip of woods now owned by an Indian named Choctaw Given. The principal feature of this work is an oval ridge, now a foot to a foot and a half high, in the timber, readily traceable across the lane, and still discernible throughout most of its course in the cultivated field, its entire circuit being about 750 feet. Within this oval, at the end now covered by woods, is a mound about ten feet in diameter and three feet high, but there are no other well-marked mounds, although some artificial inequalities are still discernible in the cotton-field. At one point in its periphery the oval ridge is broken and a circular space about twenty-eight feet in diameter can be made out cutting through it. Nearby are a number of small pits, three to four feet across and a foot or two deep. Within and upon the earthen ridge are a number of trees, principally post oak, twelve to eighteen inches in diameter, while one giant oak entirely within the enclosure measures at least four feet through.[1]

Two or three miles west of this work, on the side of a hill above a notable spring known as Kealedji spring, is an earthwork of similar character. The oval, 650 feet in circuit, can be plainly traced, although more than half is now covered by yards for cattle and hogs, separated by worm fences and belonging to a farmhouse close by. An elderly woman who had lived upon this farm for a year knew nothing about the earthwork in question. Two or three

[1] On my second visit to this place, in May, 1912, I found that this tree had fallen.

ovals, similar in character, are said to be scattered through the same region, but I did not see any of them. From the archeological point of view this is about all there is to be said about these oval works, and whether they were for ceremonial, mortuary, or defensive purposes, on that ground alone it would be impossible to say.

Now, as a matter of fact, we know the history of the works described, for what they were used, and approximately how long it took to form them. They were the busk-grounds first regularly occupied by the Creek Indians when they moved into this country from Alabama, the one first described being that used by the Tukabatci and the second that of the Kealedji, while the unvisited ovals were the busk-grounds of the Eufaula, Atasi, and other branches of the Creek Indians. The Tukabatci mounds were made between the time of the removal of the Creeks (1836–1840) and 1871, and those of the Kealedji during approximately the same period.

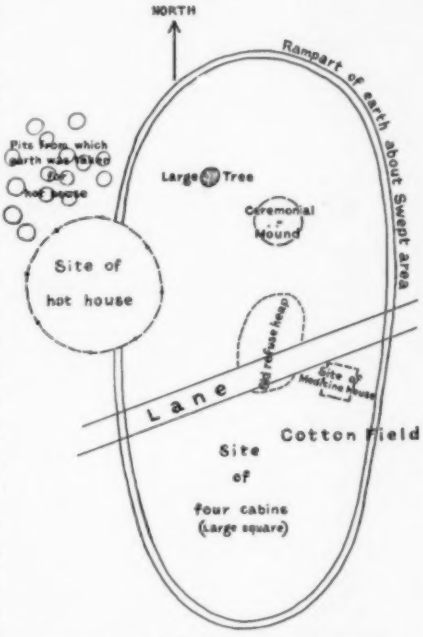


FIG. 43.—Site of old Tukabatci busk-ground.

Fig. 43 gives an idea of the general arrangement of the Tukabatci ground as still traceable and as explained by a man who had seen it when in use. North of the lane, which runs over one end of an old refuse heap and close to the site of the medicine-house, where the sacred vessels and shields were kept, is the big tree and the good-sized mound referred to above. This latter was

used in the war dances and other ceremonial performances, and in the old country it was surmounted by a ceremonial ball-post, the "chunk-post" of earlier writers, but for some reason or other no post was placed upon this mound nor upon the ceremonial mound in the present busk-ground of the Tukabatci. On the old Kealedji ground (fig. 44) a very large circular rise (on the line of the wire fence) is all that is left of this mound, which was probably actually surmounted by a post in this case. The circular space referred to as cutting the Tukabatci oval (fig. 43) is now seen to be the site of the old "hothouse," and the pits near it the places from which earth was taken to cover its roof. The four cabins were principally south of the lane in the cotton-field.[1] At the Kealedji site (fig. 44) little more can be made out except the site of the fire in an angle of the worm fences. At the northern end, where it has been little disturbed, the oval ridge is even higher than that of Tukabatci. On account of their method of formation these oval ridges surrounding the busk-grounds are of peculiar interest to the archeologist, and deserve special consideration. In any recently established ground of this kind among the Creeks and Seminole such a ridge is wanting, while in those which have been occupied for a number of years, such as Nuyaka, there is a distinct ridge of the same character, though much lower, perhaps from four to six inches high. The explanation of this difference is as follows: The area of a Creek busk-ground, occupied by the four cabins (*tcuka łaqo*, "big house") and the ceremonial ball-post, is called the "swept area" because it must be swept off every year before and during the annual busk and also before each of the three "stomp dances" that precede it. In Tukabatci it would seem that this area is cleaned off about nine times every year. The sweepings of any one year, however, especially now that the old customs have fallen into abeyance, are not very great, but in the course of several seasons a slight ridge makes its appearance around the edge of the "swept area," and this ridge is steadily, if slowly, increased. If the same ground is used for very many years, however, the ridge becomes quite formidable in size and we have the condition presented

[1] Subsequently I learned that they were where the lane now is.

at old Tukabatci and old Kealedji. It should be added that the area of the four cabins is either swept oftener or a little more thoroughly than the rest of the area, so that some towns show an inner ridge surrounding them. Besides this a small mound of earth is frequently used nowadays to represent the old "hothouse", and another is a kind of women's headquarters, where the women form before dancing into the big square. Other mounds are formed accidentally around trees or other obstructions, the refuse piling up against them instead of being swept past. The area is by no means entirely freed of trees, as is to be observed in a number of grounds occupied at the present time, and the big oak tree within the Tukabatci oval was always there. Some of the others at the same place may have taken root before the ground was abandoned.

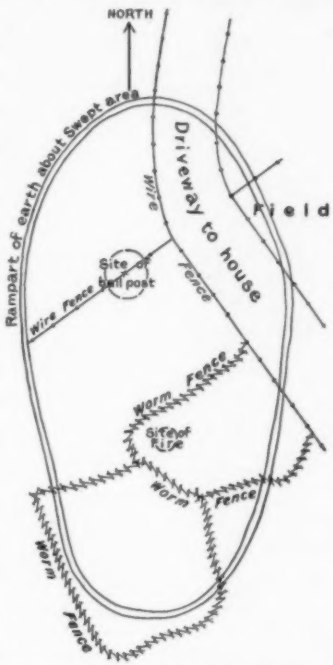
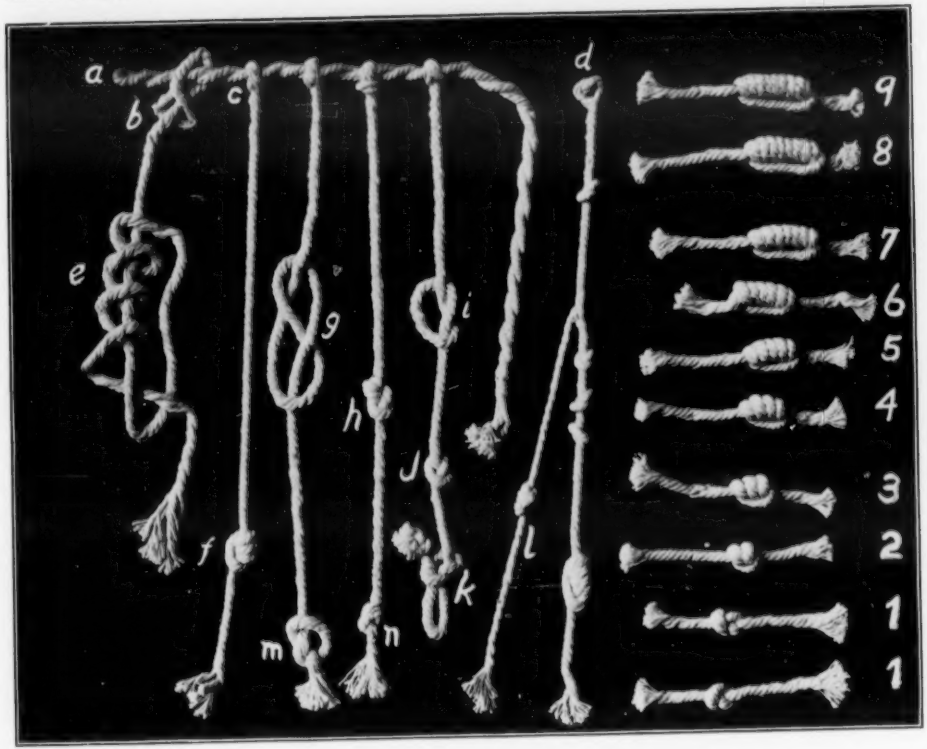


FIG. 44.—Site of old Kealedji busk-ground.

A certain type of earthwork is thus shown to be of Creek origin, and this type should be kept in mind by archeologists working in Alabama and southern Georgia. At the same time it should be remembered that the earthen ridge is in the nature of an "accident" resulting from a certain custom. We may say that it is not the "fill" but the "cut" that is of importance to the Creeks, and they might and probably did level the ridges if they became uncomfortably high. Conscious mound-building does occur, however, in the mound for the ball-post or the ceremonial dances, and, going farther back, William Bartram informs us that anciently the ballground, or "chunk-yard" as he terms it, was between the "big

house" and the "hothouse," and that each of these latter was placed upon an artificial mound. From these facts it appears that the claim of the Indians of the Creek Confederacy as mound-builders can not altogether be denied, the proofs extending down by regular continuity to the present time and backward to greater and greater works in the remote past.

BUREAU OF AMERICAN ETHNOLOGY
WASHINGTON, D. C.



MODE OF TYING THE KNOTS

a, main cord; *c*, knot for the number *three*, loose; *f*, the same, taut; *g*, *h*, *i*, *j*, knots for *one*.

THE ANCIENT QUIPU, A PERUVIAN KNOT RECORD

By L. LELAND LOCKE

INTRODUCTORY NOTE

The following article by Mr Locke appears to be a genuine contribution to our knowledge of the quipus, and to make it quite certain that the knotted cords were used simply as numerical records, and not, as is often supposed, for narrative purposes. Mr Locke shows clearly that he is able to read the various authentic specimens, since his interpretation admits of a definite check. It would seem, therefore, that we have here the earliest known decimal notation of the Western World, at any rate the earliest that admitted of easy transportation. The publication of such an article will be of interest to archeologists as well as to those who work in the domain of the history of mathematics. For the latter, the quipu forms a chapter in the extensive history of the abacus, a topic that has never yet been worthily treated but one that Mr Locke is beginning to investigate.

DAVID EUGENE SMITH,
Columbia University.

THE use of knots in cord for the purpose of reckoning and recording number seems to have been as universal as the figures of the cat's cradle[1] in the play life of primitive peoples. Both may be said to be indigenous to all lands in which the arts of spinning, weaving, and dyeing have been cultivated. In two noteworthy cases tradition makes the knotted cord serve as letters. In China[2] knot records are said to have preceded the knowledge of writing.

In more recent times the most remarkable development of knot records took place among the Incas of Peru. Here is found the anomaly of a people with a highly complex civilization, particularly in governmental machinery, with a wealth of tradition, and with a peculiarly rich and expressive language, but with no system of

[1] Jayne, Caroline Furness, *String Figures*, New York, 1906.

[2] Carus, *Tao-Teh-King*, English edition, p. 137; Goguet, *De l'Origine des Loix*, etc., 1758, vol. III, pp. 171, 312; De Mailla, *Hist. Gen. de la Chine*, vol. I, p. 4; Martini, *Hist. de la Chine*, vol. I, p. 21; *Jour. Ethn. Soc.*, London, 1870, pp. 5, 13; *Nature*, 1876, vol. II, p. 405.

writing,[1] either hieroglyphic or phonetic. A very important question concerning the culture of the Incas is to determine to what extent knot records took the place of writing. Nearly all writers on Peruvian history and archeology, during and since the Conquest, have detailed, at more or less length, the practice of using knotted strings, or *quipus*,[2] not only for numerical records but for the preservation and transmission of royal orders, orations, poems, traditions, and historical data.[3]

The most reliable information given by one who actually understood[4] and used the quipu is to be found in the works, cited above, of Garcilasso de la Vega. The writer was born at the Inca capital, Cuzco, in 1539. He was the son of a Spanish cavalier of the same name, and his mother was the Inca princess, Chima Ocllo, a niece of the Inca Huayna Ccapac. The young Inca spent the first twenty years of his life among his mother's people, imbibing their culture and traditions.

There are five sources upon which a comparative study of the quipu may be based:

1. A compilation[5] of statements from Spanish sources following the Conquest.

[1] *Commentarios Reales, por el Inca Garcilaso de la Vega*, Madrid, 1723, vol. I, VI, chapters 8–9, pp. 181 et seq. Vol. II is entitled *Historia General del Peru*, Madrid, 1722. References to Vega in this paper are uniformly to this edition. Tradition says that in the reign of Huanacauri Pirua, the third of the old kings of Peru in the list of Montesinos, the use of letters was known and the art of writing on plantain leaves, and that the eighty-first king, Tupac Cauri Pachacuti, prohibited the use of plantain parchment and introduced knotted strings.

[2] The word *quipu* in the so-called Quichua language means "knot", and those in charge of the records were called *quipucamoyas*.

[3] Vega, I, chapters 8–9, II, 23, p. 29; Polo de Ondegardo, Corregidor of Cuzco in 1560, *Relaciones*, MS., quoted by Prescott, *Conquest of Peru*, I, p. 123; Cristoval Vaca de Castro, *Discurso*, p. 5, quoted by Bandelier, *Islands of Titicaca*, p. 332.

[4] Yo tratè los Quipus, y fiudos con los Indios de mi Padre, y con otros Curacas, quando por San Juan, y Navidad venian à la Ciudad, à pagar sus tributos. Los Curacas agenos rogavan à mi Madre, que me mandase les cotejase sus Cuentas; porque como gente sospechosa, no se fiavan de los Españoles, que les tratasen Verdad en aquel particular, hasta que yo les certificava della, leiendoles los traslados, que de sus Tributos me traìan, y cotejandolos con sus fiudos; y desta manera supe dellos tanto como los Indios.—Vega, I, VI, 9, p. 183.

[5] The writer is completing a bibliography of the quipu and such a compilation. He wishes to express his appreciation for much help and suggestion generously given by Mr A. F. Bandelier.

QUIPU, OR PERUVIAN KNOT-RECORD

The number of pendent cords (93) is indicated by knots on the ends of the main cord. B 8705 American Museum of Natural History. Scale ½.

2. Drawings of supposed quipu. Some of these are without question apocryphal, while those that are genuine are drawn with little attention to the details which are necessary to a satisfactory study.

3. Specimens of ancient quipus exhumed from Peruvian graves and now in the collections of various museums.[1]

4. Specimens of present day quipu.[2]

5. A compilation of statements of explorers and ethnologists from the time of the Conquest to the present relative to the continued use of the quipu.

The characteristics of the ancient quipus, both as described by the Spanish writers and exemplified in extant specimens, are:

1. A main cord varying in length from a few centimeters to a meter or more.

2. Attached to the main cord are pendent cords seldom exceeding 0.5 meter in length. These vary in number from one or two to a hundred or more in existing specimens. The manner of forming the cords is to spin a cord of twice the length desired, then double it with a loop at one end as seen in pl. XXI, *b*, and twist the two strands together. Usually a knot is tied at the end of the cord, and in most cases the cord tapers off at the end, indicating the running out of the material in spinning. Both cotton and wool were used, natural white and buff being available in both materials.

The pendent strands are attached to the main cord by passing the free end over the main cord and through the loop formed by doubling and then drawing it taut. See pl. XXI, *b*, *c*. They are variously distributed along the main cord, sometimes with short spaces between the groups, and in other cases placed close together.

3. Knots are tied in the pendent cords at varying distances

[1] The American Museum of Natural History in New York City possesses a very extensive collection from the Peruvian expedition conducted by Mr Bandelier during the ten years following 1892. Through the courtesy of Mr C. W. Mead the writer has been furnished abundant facilities for making a detailed study of this collection.

[2] Cf. Bastian, *Ethnologisches Notizblatt*, 1895. Uhle in *Bulletin of the Free Museum, University of Pennsylvania*, 1897.

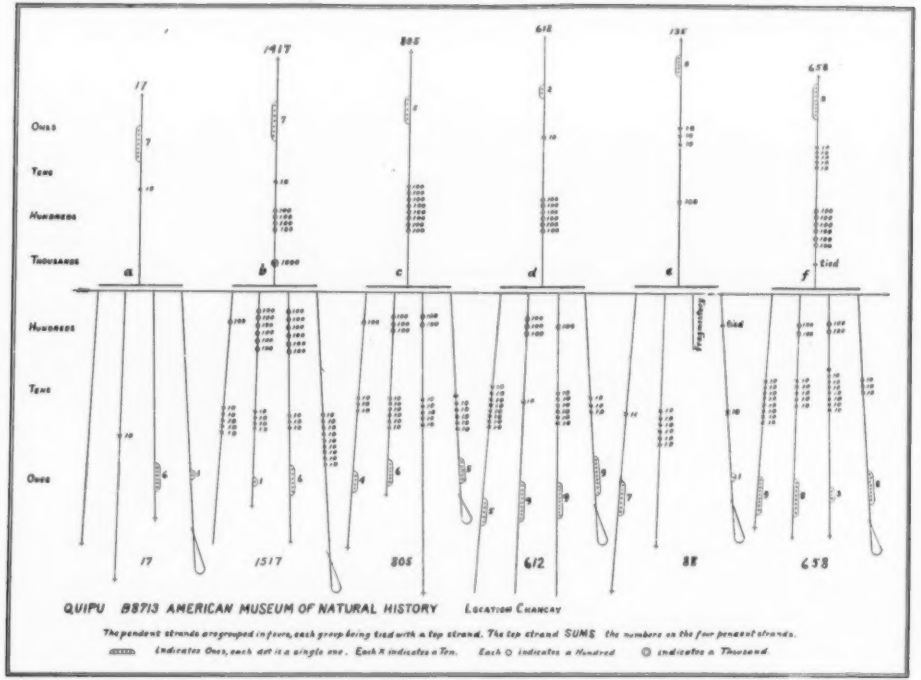
from the main cord. These groups of knots are arranged roughly in rows across the quipu. (See pl. XXIV, and compare with Vega, I, VI, 8–9, p. 181 et seq.)

4. In nearly all of the ancient quipu short subsidiary cords are attached to the pendent strands, upon which are indicated numbers that disturb the main count of the quipu.[1] The mode of attaching is seen in pl. XXI, *l*. The subsidiary cord is not found in the specimen discussed in this paper, except that there is an indication of such attaching in cord *b4*, pl. XXIII, where there is a discrepancy in the count of the cord.

5. Character of the knots. Plate XXI shows the forms of the knots and the mode of tying which exist in specimens studied. The single or overhand knot (*i*, *j*), indicates 1 if it is in the row farthest from the main cord, 10 if it occurs in the next row, 100 in the next row, etc. Not more than nine single knots are found in one group, the number system being strictly decimal.

The long knot, used to express the repetition of units of the same order in place of a cluster of single knots, was likened by Mr Frank H. Cushing to the appearance of the closed fist. (See pl. XXI.) It is formed by tying the overhand knot and passing the end through the loop of the knot as many times as there are units to be denoted. (See pl. XXI, *e*, *f*.) One end is then drawn taut, thus coiling the other about it the required number of times. There seems to have been no fixed practice as to which end is drawn taut, the upper fixed end, or the lower pendent end. As this would lower or raise the knot on the cord, it is possible that the device was used to keep the knots of one order relatively the same distance from the main cord. The loop has apparently no numerical significance, but from the manner of its appearance on the specimens examined it may have had some such use as the red line used by bookkeepers in closing an account.

[1] Algunos destos hilos tenian otros hilitos delgados del mismo color, como hijuelas, ò eccepciones de aquellas reglas generales, como digamos en el hilo de los hombres, ò mugeres de tal edad, que se entendian ser casados, los hilitos significavan el numero de los Viudos, ò Viudas, que de aquella edad avią aquel Año.—Vega, I, VI, 8, p. 181. Cf. Bastian, loc. cit., and Uhle, loc. cit.



ARRANGEMENT AND NUMERICAL SIGNIFICANCE OF THE KNOTS

The following problems are presented by the Spanish accounts of the quipu:

1. Was the quipu used to record historical events, other than dates and numerical data?

2. Were the knots, mode of tying, grouping, color of cord, twisting of the strand, and distances used to convey ideas?[1] Or were they used merely as *memoria technica*, without any individual significance, as is the case with the beads of the rosary?

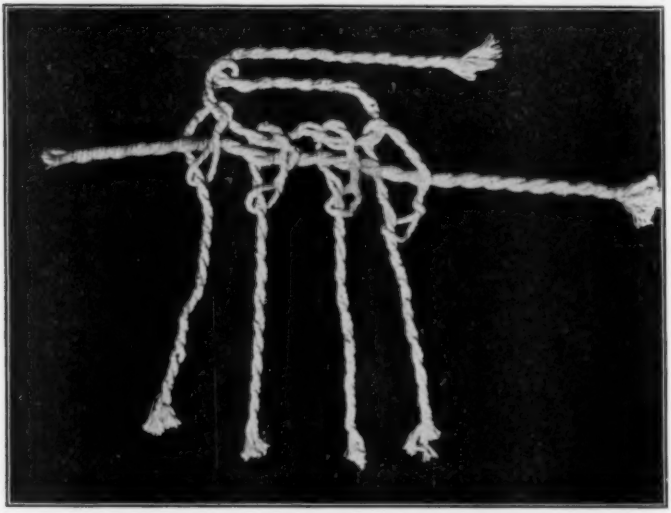


FIG. 45.—Manner of grouping the pendent cords and of attaching the top cord.

3. What was the significance of color? It is well known that there was a system of using roughly suggestive colors, as red for war, yellow for gold, etc.[2]

4. What is the significance of grouping: of distances between the knots and from the main cord; and, finally, of the individual knot?

It is the purpose of this paper to present a study of a represen-

[1] *Tenth Annual Report of the Bureau of Ethnology*, 1888–89, p. 369.

[2] Cf. Bastian, loc. cit., and Uhle, loc. cit., and also Bastian, *Die Culturländer des alten America*, III, p. 74.

tative specimen to determine what light it may throw on these questions.

The specimen shown in pl. XXIV is No. 8713 of the Bandelier collection in the American Museum of Natural History in New York City, and is one of a number of similar specimens from Huando, on the coast north of Lima. This village was of the Chancay tribe, which was subdued by the Incas some time before the Conquest, and from which tribute was levied. The characteristics of this and the other specimens from this vicinity are: (1) the practice of using the long knot for units only and groups of single knots for the higher orders; (2) the use of the loop on the first (or last) cord of a group; and (3) the pendent cords are grouped by passing a top cord through the top loops of the group as in fig. 45. *The top cord sums the numbers on the pendent cords through which it is looped*, thus giving an accurate key to the numerical character of the knots. Some difficulty was experienced in reading the long knots, owing to the condition of the cord. In the accompanying table is given the first reading, followed by the probable reading in parentheses. Pl. XXIV is from a photograph of the quipu; pl. XXIII is a diagram of the arrangement of the knots, and of their numerical significances.

The following hypothesis may be made in regard to this quipu. It is possibly a record for six periods or years of four kinds of objects.

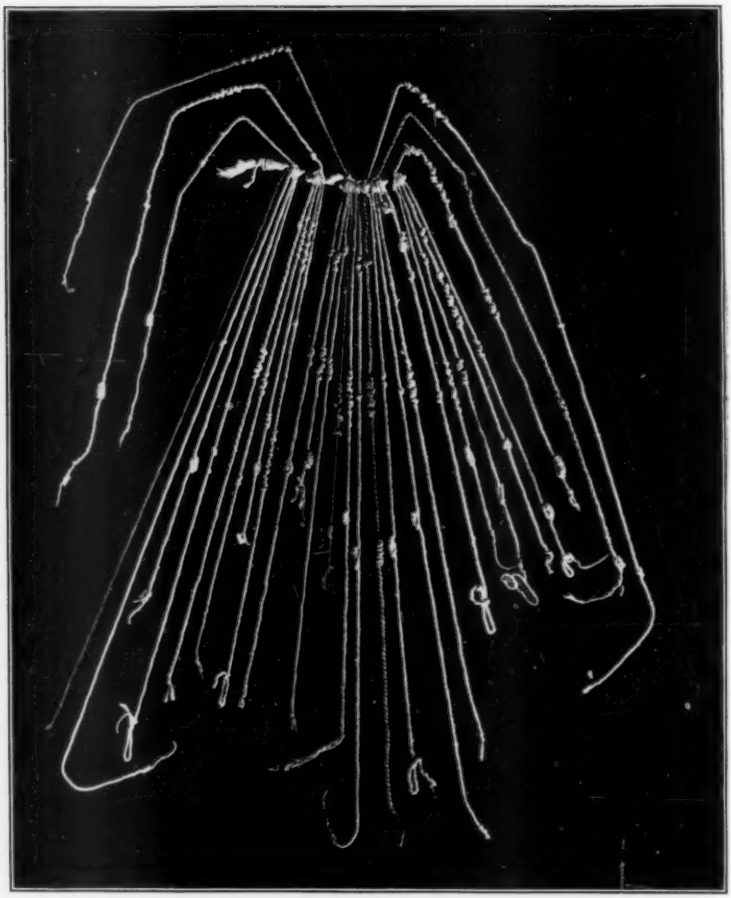
Conclusions

1. These knots were used purely for numerical purposes.

2. Distances from the main cord were used roughly to locate the orders, which were on a decimal scale.

3. The quipu was not used for counting or calculating but for record keeping. The mode of tying the knots was not adapted to counting, and there was no need of its use for such a purpose, as the Quichua language contained a complete and adequate system of numeration.

4. Other specimens examined contain the same types of knots, there being but ten variations in all, two forms for the single knot and eight long knots. These eight differ from each other and from the single knot only in the number of turns taken in tying. There



AN EXAMPLE OF THE HIGHEST DEVELOPMENT OF THE QUIPU AS A NUMBER RECORD

American Museum of Natural History, B8713. Scale ¼.

TABLE OF KNOT READINGS AND COLORS

Strands	1000's	100's	10's	1's	Color
Main cord	—	—	—	—	White and dark brown
1	—	—	—	—	Brown
2	—	—	1	—	White
3	—	—	—	6	White
4	—	—	—	1	White
Sum	—	—	1	7	
a	—	—	1	7	Very light brown
1	—	1	5	—	White and reddish brown
2	—	6	4	1	White and light brown
3	—	6	3	6	White and dark brown
4[1]	—	—	9	—	White and dark brown
Sum		13	21	17	
b	1	4	1	7	White and light brown
1	—	1	3	4	Brown
2	—	3	6	5 (6)	Brown
3	—	2	5	—	Brown
4	—	—	6 (5)	5	Brown (darker)
Sum	—	6	19	15	
c	—	8	—	5	Light brown, reddish
1	—	—	8	6 (7)	Blue
2	—	3	1	9	Blue
3	—	1	6	8 (9)	Blue
4	—	—	3	6 (7)	Blue
Sum	—	4	18	32	
d	—	6	1	2	Light brown, yellowish
1	—	—	1	7	Light blue and white
2	—	—	6	—	Light blue and white
3		Fragmentary			Light blue and white
4	—	—	1	1	Light blue and white
e	—	1	3	5	Light brown and dark brown
1	—	—	8	9	Light brown
2	—	2	5	8	Light brown
3	—	2	7	3	Light brown
4	—	—	3	8	Light brown
Sum	—	4	23	28	
f	—	6	5	8	Light brown

is nothing about any specimen examined to give the slightest suggestion that it was used for any other than numerical purposes.

[1] Fragmentary subsidiary cord, attached (?); discrepancy of 100 in count.

It may be that through the irony of fate no historical quipus, if they ever existed, have been preserved.

5. If the hypothesis that this quipu is a record of the same classes of objects for six periods be correct, it would seem to indicate that the colors in this case have no special significance, but were taken according to the fancy or convenience of the maker. This does not signify that there was not a rough color scheme in use for some purposes.

6. These specimens confirm in a remarkable way the accuracy with which Garcilasso described the manners and customs of his people.

COLUMBIA UNIVERSITY
NEW YORK CITY

SOME NOTES ON THE PAWUMWA INDIANS OF SOUTH AMERICA

By J. D. HASEMAN[1]

DURING 1907–1910 I was in central South America collecting fishes and other fresh-water animals for the Carnegie Museum. The appended map gives the route of the expedition. Throughout this long journey I was the only white man on any of the interior trips. No interpreters were employed, and therefore I was forced to learn some of the native, including Indian, dialects, in various parts of South America. As a result I obtained considerable first-hand knowledge of many tribes of South American Indians. I had previously been on two blind-fish expeditions to the caves of Cuba, and my experience with the natives of that island made it easier for me to regard the Indian from his own viewpoint rather than from that of a white man. The observations recorded in these pages are in a measure the result of three years of field work as a naturalist in tropical America.

The purpose of this paper is not to give my experiences with numerous South American tribes of Indians which are more or less civilized or have been directly or indirectly influenced by civilization during the last three centuries: it is to give my observations on one tribe, the Pawumwa, who are apparently unknown to science and live under conditions little or not at all affected by the civilization of the white man.

My observations have led me to the conclusion that the South American Indians are a nervous, excitable, cowardly race; that they have become dangerous only after contact with the whites, and must not be regarded as cannibals.

The map (fig. 46) and notes published in this paper will also

[1] I am indebted to the Carnegie Museum for the opportunity to explore central South America. For a fuller account of the expedition see *Ann. Rep. Carnegie Museum, 1911*. I am also indebted to Dr R. H. Lowie and Dr L. J. Frachtenberg for their assistance in preparing these notes.

FIG. 46.—Itinerary of 1907 and 1910, with areas occupied by primitive tribes.

indicate the regions of South America covered by my travels in which primitive Indians live. I therefore hope to arouse an interest in these areas and make an appeal that exploration be undertaken promptly, lest primitive conditions be destroyed by the *serringueiros* (rubber cutters) before modern scientific study of them can be made.

Before presenting the observations on the Pawumwa Indians, it must be noted that great difficulty was encountered in learning even a few words of their language during my brief acquaintance with them. I was unable to take any skull measurements, because the natives could not understand their importance. My photographs of them were spoiled in passing the twenty-seven Madeira-Mamoré falls during the rainy season. However, the imperfect study of these Indians here presented may be of some interest in view of the fact that Rio Guaporé has been descended by only one other naturalist, Johannes Natterer.

During the first two years of active field-work in the interior of South America I was unable to meet primitive Indians. I saw many signs of Indians, but the more primitive ones always fled on my approach. It was therefore necessary for me to forego my desire to meet absolutely primitive Indians in favor of the hope to find a tribe that was influenced just enough to accept the friendship of the white man. This hope was finally realized during August, 1909, along the lower course of the Rio Guaporé.

Near the mouth of Rio São Miguel is a rubber camp that has recently been established on the Brazilian side of Rio Guaporé. Great care was taken in exploring and opening a road into the dense forest between the fork of Rio São Miguel and Rio Guaporé, because all this region was known to be a hunting ground of Indians. An old negro in charge of the establishment of the rubber camp gave me the following account of their first contact with the Pawumwa Indians.

They had been at work for about two months and had seen no Indians. Each morning they crossed the Guaporé to their work on the Brazilian side, and each evening they recrossed to sleep on the Bolivian side. One evening, when they were returning to their canoe, they were confronted by a large Indian, who proved

to be the chief. He rushed toward the old negro and his companions, shouting all the time, but the negro stood his ground and ordered his companions not to shoot. He embraced the chief, who then whistled, when suddenly many warriors appeared from all sides. The chief then went in advance toward the canoe in order to pacify the warriors whom he had stationed there to finish the slaughter if a battle had ensued.

The rubber cutters took the trembling Indians across the Guaporé to their temporary camp on the Bolivian side. They exchanged presents, but the Indians trembled with fear and did not sleep during the following night. The next morning the rubber gatherers took the Indians back to Brazilian territory, and the two parties separated without being able to understand a word of each other's language, though the old negro had companions who spoke the languages of the Parecis, Paucerne, Guarani, Chiquitano, and Guarayos.

About a year later a few of the same Indians, with several other tribesmen, came back to the rubber camp. The good old negro prohibited any sort of abuse of the Indians, in the hope of establishing a treaty with them. This visit was followed by another. I had the good fortune of being present during the fourth visit, in August, 1909. At that time a petty chief with some twenty followers came down from the headwaters of Rio São Miguel to fish in Rio Guaporé. It was his first appearance at the rubber camp. A few days later a greater chief arrived with about fifty followers, this being his second visit to the camp.

Before giving my observations on these Indians I think it desirable to present a brief description of this part of Brazil. The Guaporé is one of the most picturesque and interesting rivers of tropical South America. It rises on the sand-capped barren highlands of Matto Grosso, Brazil, near one of the headwaters of Rio Paraguay. After flowing southward and westward for almost two hundred miles, it makes an elbow-bend, flows northward and northwestward, and finally empties into Rio Mamoré. From Villa de Matto Grosso (Villa Bella, the first capital of Matto Grosso) to the Mamoré, it has a continuous dense tropical forest along both

margins, excepting in two places, one of which is known as Campos dos Veados and contains about sixteen square miles of grassy plains. Naturally, some ten miles or more inland from each margin of the river, *campos* are found as soon as one leaves the dense forest and approaches the distant faces of the dissected highland along whose bases much sand is deposited. The highlands are capped with sandstone of Permian age; hence Rio Guaporé is, geologically speaking, very old. Its age is shown by the great width (one hundred miles) of the valley in its central course and by the vast amount of the highland that has been eroded and washed away. This great transformation of the highland brought about by a long interval of erosion has produced complex environments where the evolution of plants and animals has reached its climax. The forests are rich in nuts, fruits, game birds, and animals; the rivers abound in fish and turtles. Hence the Pawumwa Indians are surrounded by the richest natural resources offered to primitive man. The climate is usually a delightful tropical one, especially during the dry season (April to October), excepting for an occasional cold southwest wind, therefore little clothing is needed. The region is, however, poor in mineral deposits, consequently wooden implements are to be expected. The region is infested with ticks, flies, mosquitoes, fevers, etc., but it is not so inhospitable to man as regions of lower altitude, like the central course of Rio Madeira.

When I first met the Pawumwa they were shaking with fear. Even after I had learned a few words of their language, they would run and hide. They were at first very suspicious and ever ready to steal and to deceive me, but after I had gained their confidence, they were a "jolly lot of children," and not at all stoical. At first one would call an object by one name, while another individual would give it a different name. I finally called a dozen of them together and seated them in front of me. In less than five minutes they became restless, but during similar short interviews I was at last able to get a small list of words confirmed by several individuals all answering at the same time. This study progressed more rapidly after I was able to make them understand that I was going to return and present them with clothing, beads, firearms, fish-

hooks, etc. After about two weeks, I was able to take them with me when I seined the river. Often I would present them with a canoe load of fish. This perhaps more than anything else caused these Indians to regard me as the greatest of great chiefs. In fact several individuals wanted to join my people. Even the daughter of one of their greater chiefs voluntarily offered to go to "my tribe".

They were extremely excitable and emotional, and easily frightened, as are most men living in similar regions where, day and night, one must always be prepared to fight some human or animal enemy. They begged me to give them a gun, because a *pum* (report of a gun) would be sufficient to scare away the inimical tribes farther inland, of whom they were in fear. These inland tribes are unknown—they may be Nymbycuaras found on the highlands along Rio Juruena of Rio Tapajos.[1]

Most of the Pawumwa Indians are short and thick-set, but a few individuals are tall and slender. For the greater part they have round heads, but the shape of the head also varies a great deal. Their color varies from dark copper to light copper. The trunk is well developed, but the arms and legs are rather slender. Their backs are flat, as appears to be the rule when men sleep constantly on the ground. Like all other primitive Indians, they are not strong in our athletic sense. I could lift more, and could out-run and out-throw them, but they exhibited greater endurance. For example, they could carry a load of fifty to a hundred pounds all day without resting, and this I was unable to do.

On a limited scale they plant tobacco, corn, mandioca, and a few other plants. They kill part of the timber and burn the brush, then the seeds are placed in holes made with pointed sticks of hard wood. This planting is done near their permanent village, situated on the headwaters of Rio São Miguel. All work together, and the chief always obtains more of the crop than any of his tribesmen. If any one refuses to assist in planting, the chief forces him to work. I saw one Indian with a long scar on the side of his head and neck, the result of punishment for laziness. The chief struck him with his four-foot heavy black *cereve* (palm) sword, sharpened on both

[1] Cf. *Brazilian Telegraph Com. Report, 1909–1910.*

edges. The Indian said that he slept fourteen times (days) before he awoke and should never refuse to obey the chief.

The chief himself is not always the largest man in the tribe, nor the strongest; but he is a very serious or wise-looking individual, and is always taciturn. The son of a chief does not inherit the position unless he has these characteristics. I saw the son of one of their dead "great chiefs" and he belonged to a little chieftain's tribe. They had one great chief, two others of different grade below him, and three little chiefs. In regard to important questions, like war with hostile tribes, they obey the great chief. The greatness of the chief is measured by the number of his followers. I met one young little chief who had only seven followers; but he impressed me as being wiser than some of the greater chiefs, and as the number of his followers increases, he will probably usurp the place of a higher chief and finally become the great chief. This is done even at the expense of intra-tribal warfare, or else by murdering the greater chief and then usurping his position. In fact they often have individual and intra-tribal fights over women and over individuals who leave one petty chief to join another petty band.

The tribe consisted of about three hundred individuals. Their hunting ground covered at least nine hundred square miles. This estimate is as low as can possibly be made for forest Indians who supplement the natural products by small plantings, and it will give an idea of how many Indians might have existed in South America during pre-Columbian times. But three square miles per individual is too low an estimate when we take into consideration the scanty natural products on the highlands and in the various desert-like regions of South America. The existence of a crude form of agriculture does not prove that these Indians are not primitive, for I believe that both before and after the discovery most South American Indians cultivated certain plants in greater or less quantities, the species varying with the location of the tribe and including mandioca, peanuts, tobacco, corn, and the cane.

Around their camp I had an opportunity to observe some of the customs and habits of the Pawumwa. They usually went hunting with bows and arrows early in the morning, and often shot fish

along the banks of the river. One day the petty chief shot an electric eel. He attempted to cut off its head with my hunting knife, but as soon as the knife touched the eel he tumbled with a grunt to the ground. He was intelligent enough not to use the knife a second time, so he killed the eel with a club and then roasted it. They roast fish with scales, intestines, and all intact, over hot coals by placing them on green limbs tied with bark to a tripod. As soon as the fish are roasted, the father and mother and their smaller children eat together. The boys and girls pair off, and as a rule the boys who capture the most game have the choice of the girls.

They do not eat anything seasoned with salt, hence they did not like my food. I am inclined to connect their peculiar wild odor with the lack of salt in their food: at any rate two individuals who were taught to eat salt-seasoned food lost this peculiar odor. Their perspiration was tasted and it lacked salinity. They bathe at least twice a day, even when they have the fever, in order to cool their bodies, hence the peculiar wild odor is not due to lack of bathing. The absence of an excess of salt may in some way change the nature of the external secretions and excretions, or else permit a greater decomposition of them on the surface of their bodies. At any rate animals and Indians that eat an excess of salt (NaCl) do not have such strong and offensive odors as do those obtaining the salts necessary for a correct osmotic pressure in the blood from only plants and the flesh of other animals. I offer this view only as a suggestion, which I hope will be tested by experiments, as it may be of importance in the case of all animals living in regions devoid of salt licks. If it be only true in part, then the decomposition of waste products in the case where no special odor glands are known may be a means by which animal species are able to detect one another. At all events one can actually smell the trail passed by an old forest jaguar or a Pawumwa Indian for many minutes after either has passed.

The Pawumwa eat almost any kind of animals. They do not, however, eat snakes, though they relish alligators and monkeys. They take advantage of the abundance of fish in the rivers. They are constantly roasting and eating, for they never or seldom eat a large meal, preferring to mince all day and part of the night.

As soon as the girls are old enough to be courted they have their lips pierced. A long cylindrical olive-colored *inókokòt* made from the resin of the *porora* tree is inserted in the lower lip, and a shorter stud made from the same resin is inserted in the upper lip (fig. 47). This ceremony is performed by the chief, and usually takes place about the time of puberty or a little before (often before nine years of age in the better developed girls). The incisions are made with sharpened splinters (knives) of *taquara-ussú* (big bamboo). This is a sign that the boys and unmarried men may court these girls. The suitor is usually more successful if he is a good hunter and fisherman. He gathers the game and sits down by the girl, who roasts it. In this way the girls become accustomed to the boys and men, with whom they sleep around the camp-fires. Later they are given a husband by the chief and are usually married to a man of the same subtribe.

FIG. 47.—Lip plugs of resin from the *porora* tree (*a* for upper lip; *b* for lower lip).

When the girls are married, often at from nine to twelve years of age, the *inókokòt* is taken out, and a larger incision is made and a *pikín* stone inserted (fig. 48). This is a piece of polished white quartz, which comes from the hill or small mountain known by the same name. I offered some presents to an Indian if he would obtain for me a set of these stones, but when he attempted to take those of his wife, she ran to the chief and the husband received a severe flogging. These stones must not be removed from the lips of a married woman, because they are a sign of wedlock, and their loss may be punished by death. They are not used for personal adornment, but serve as a kind of marriage certificate. Their peculiar customs of marriage often lead to quarrels over girls and women among the male members of the tribe, and even between men of different subtribes. The family ties are not held sacred.

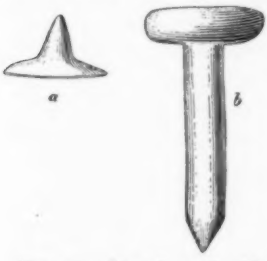


FIG. 48.—Lip plugs of white quartz, (*a* for the upper lip; *b* for the lower lip).

Most of these Indians were entirely naked, but I later learned that some of them had taken off their bark clothes in order to beg clothing. This gave exceptional opportunity to observe their body markings, etc. The majority were badly scarred by insect bites and other wounds, but I was unable to detect any signs of syphilis or other venereal diseases common among Europeans. They pluck the hairs from the arm-pits, groin, eyebrows, and eyelashes; in fact no hairs were seen excepting the long hair of their heads. They claim that they can see better without eyebrows and eyelashes, while the body hairs are pulled out so as not to harbor vermin. They all have lice on their heads, and, as is quite common among South American Indians, they either eat them or kill them with their teeth. I have often seen girls catching lice off one another's heads. The first louse captured is devoured by the owner, while all caught thereafter are crushed by the teeth of the catcher. In the above case, the pulling out of body hairs appears to be useful to them and not an attempt to beautify their bodies. The absence of salt in their perspiration also appears to be connected with the pulling out of body hairs. The sweat does not inflame their eyes, and with absence of clothing the arm-pits and groin are not chafed.

The men insert a short stick the size of a match-stem in the lower lip. This, they claim, helps them to place their tongues in various positions when they mimic the calls of birds and game animals. Nearly all men and sexually mature boys, and especially unmarried men, tie a string around the end of the penis (at least when they have no bark clothing), which is then stretched up and tied to a string that encircles the abdomen. This custom is, I believe, a sign of modesty.

Both sexes wear a small short stick in the nasal septum, the ends protruding into the nostrils. This peculiar custom is associated with a primitive idea of medicine. They claim that disease is something solid and travels in a straight line like an arrow, while air is like nothing and can bend corners. Hence, when they breathe the disease strikes the end of the stick and falls out of their nostrils, while the purified air passes into their lungs. Both sexes also wear sticks in the lobes of their ears, but I was unable to obtain any explanation of this custom.

Both sexes also tie bandages around their wrists, in some cases around their forearm and biceps and their ankles and calves. They claim that these bandages prevent poisonous snake bites from killing them. It is conceivable that some former medicine-man found that by checking the circulation of the blood through a limb thus wounded, the sudden depression of the respiratory and circulatory organs was prevented. After his death, it is possible that the Indians adopted the habit of bandaging the limbs because they considered it useful. At any rate, great constrictions of the arms and legs due to bandaging are not to be considered a thing of personal ornament, for I observed that the boys with more perfect physiques were usually more successful in making love to the girls.

The Pawumwa use palm spines dipped in a fruit known in Brazil as *jenepapa* to make black designs in their skins. Their system of tattooing is mostly for tribal distinction, especially in case of battle. The daughter of the chief was marked differently from the other girls. One young girl, about ten years of age and wearing an *inóokòt*, had tattooed lines extending from her knees over her thighs. These lines met in an arch beneath the navel, whence two lines extended to the vulva and two to the mammary glands. Lines extended from the breasts to the neck, and others traversed the forehead and cheeks. I was unable to determine the meaning of the tattoo devices. As a rule, black tattooed lines are found on the legs, arms, lips, nose, cheeks, and above the eyes.

Most of the implements of these Indians are of wood, but this is due to the environment in which they live. Metals, flint, etc., are not found on their hunting grounds. They have lip stones for married women, as above noted, and also crude axes and grain and nut crackers made of stone. They manufacture some large undecorated earthenware pots for use in making a beverage from chewed corn, and smaller pots in which arrow poison is brewed. Their knives are made by sharpening dried splinters of *taquara-ussú* with the two gnawing teeth of agouti, a rodent. Arrows also are made from *taquara-ussú*. In addition, they made arrow-points from hardwood, *cereve* palm, catfish spines, sharpened bones of animals (usually the femur of a monkey), and human bones obtained from brave enemies killed in battle.

The poisoned hard-wood arrows have a cotton string wrapped around the slender point, which is soaked with a black poison. The arrow-point is almost cut in two, so that it will break off in the animal when it is shot. They carry the poisoned arrows in bamboo tubes. They also have *taquara* blow-guns, about six feet in length. The arrows or delicate darts used in these guns are usually made from palm splinters. They wrap cotton around one end and poison the other end of the splinter. When this is inserted in the blow-gun, they blow against the cotton, and the dart shoots forth, enabling them to kill monkeys in the tallest trees. The poison is boiled from a vine called *awan*, which they would not show to me. The poison collects as a black tar on the boiling water. It is very probably *curaré*, but the poisoned arrows left at the Carnegie Museum have not been chemically examined. The bows are about five feet long and made from a hard black palm. The bow-string is thick and is made from native wild cotton.

Their clothing, when they have any, is made from the beaten bark of the wild fig-tree known in Brazil as *figueira*. They plait small cotton and bark fiber hammocks, but prefer to sleep on the ground with their feet turned toward the fire. I did not see any hats, and they appear to lack the skill of plaiting and weaving that is so well developed among the other tribes of South America. However, they exhibit great skill in fastening split feathers to the reed end of their arrows. This is a tribal marking, though I was unable to see how they could distinguish their bark wrappings for holding the arrow-points and their string wrappings for holding the feathers to reed ends from similar arrows of other tribes. But then any Pawumwa could without hesitation identify the arrows—always shouting "*Kabiciⁿ!*" when shown arrows from other tribes. They also had a feather headgear used both to frighten the enemy and to deceive themselves by thinking that they were cunning and fleet like some animals.

Their huts are very simple, being made by tying poles together and sticking one end in the ground and then making a thatched roof of either grass or palm leaves. They make a drink by chewing corn and spitting it into an earthen pot, where it is allowed to

ferment; it is then filtered through leaves and kept till a certain moon in August. At this time they hold a tribal meeting, but I failed to ascertain its meaning, though it may have a religious significance. The Pawumwa have no dogs.

When we compare the Pawumwa with the Incas or with white men, they appear to be of an inferior type, but such a comparison should not be drawn. We should regard them with reference to the existing and past relations among themselves and to the other living things found in their environment. When this is done, we see that they are highly specialized for life under existing conditions. In fact they are keen, close observers, and know the properties of most food and poisonous plants and animals. In short, their mode of life is adjusted to meet the existing conditions of the jungle.

I often went seining with the Pawumwa. They were always afraid of alligators, large snakes, and the like. Their fear was shown especially on one occasion when they turned loose one end of my large seine and fled to a sandbar when an alligator swam against the net. I had been at work for almost two hours removing the limbs and water plants so as to make a large catch of fish, but as soon as the alligator struck the net, the Indians turned it loose and hastened to the bank, shouting all the while. This incident impressed me with the cowardice of the natives. In battle they become so excited that little danger is encountered after their first round of arrows is discharged. Numerous cases, including a personal experience at the waterfall of Forto Principe da Biera on the lower Rio Guaporé, leave little doubt in my mind that primitive South American Indians are cowardly and become really dangerous only after coming in contact with white men.

The Pawumwa are not cannibals, nor are any of the South American Indians found in the region traversed by me. As already stated, the Pawumwa use the bones of slain enemies to make points for arrows, because such are supposed to be more effective. One always hears from the natives that the people of the next tribe are cannibals, but when one arrives it is always the next tribe, and so on. I have never met a man who has actually seen natives eating human flesh. The evidence is always indirect, such as teeth driven

in boards, skulls on poles, human bones made into arrow-points, etc. The Indians may boil the meat off the bones when they want them, but this is usually unnecessary because the tropical ants, bugs, flies, and other creatures, especially armadillos, soon clean a skeleton. If Indians camp or roast their game near such skeletons, they are at once considered cannibals by the civilized natives. I met the father of a boy who had been killed in the Serra de Pacas Novas, which is on the Brazilian side of the Guaja-mirim waterfall of Rio Mamoré. The father and the other hunters buried the boy after repulsing the Indians. A few days later they went back after the remains of the boy, but found only his bones and signs of a campfire. The father felt certain that the Indians ate his boy, but when I questioned him about the alleged cooked meat and the hair and bones he was unable to give any evidence in proof of his contention. Sensational explorers are always prone to spread what their guides and native interpreters tell them. For my part, I doubt the existence of cannibalism in any part of South America, at least during historic times.

I hope that these imperfect notes on the Pawumwa will stimulate a thorough study of the few remaining tribes of primitive Indians before the rubber cutters shall have demoralized them. Let us also hope that the explorers of the future will break away from the beaten trails of civilization and study any of the following regions, which are designated by crosses on the map.

1. The Brazilian side of the lower Guaporé and Mamoré rivers extending eastward to the headwaters of Rio Tapajos and Rio Xingu.

2. The region northeast of Manaos far into the regions between the headwaters of Rio Trombetas and Rio Branco.

3. The region of the Andean affluents of Rio Negro.

4. The East Andean region south of Rio Beni.

Of these four regions the portion between Rio Guaporé and Rio Tapajos is the least known. In fact only a small portion of this vast area was traversed by the Brazilian Telegraph Commission during 1909 and 1910.

The accompanying map (page 334) shows the route of the

writer marked in continuous dotted lines. The dotted area on the Brazilian side of Rio Guaporé marks the hunting ground of the Pawumwa Indians. The areas marked with crosses designate the regions where primitive Indians may be found.[1]

The following brief vocabulary of the Pawumwa language was obtained with great difficulty, because none of the neighboring Indian tribes could speak this language. I originally spelled the words in accordance with the Brazilian system of writing Indian languages, such as Guarani. As I had not been consistent in the use of some of the symbols, it was desirable to have the list revised by some one conversant with the methods ordinarily employed in rendering the sounds of unwritten languages. This was done by Dr R. H. Lowie, for whom I pronounced each word in the vocabulary according to the best of my recollection. Though the phonetic value of my list is admittedly slight, it may prove of some use to students of South American linguistics.

Vowels have their continental values: ^{n} indicates nasalization; *tc* represents "ch" in English "church"; *c* the sound of English "sh" in "hush"; *j* French "j" in "jour." I had difficulty in distinguishing the sounds of *n* and *m*.

Vocabulary

ītopi′, hat
katū′wa^n, fish
mō‵kokamare′m, *imbira* (Guarani tree giving bark string)
a‵tipētci′, head
makuwamnatci, hand
pīkirina′tci, arm
īparama′tci, neck
tra′ī′tci,[2] ear
tupaka′tci, mouth
kā′rati‵tci, chest
ī′ritci, nose
tu′kitci, eyes
pitci′kina‵tci, nails or claws

[1] A fairly complete bibliography of the literature on the semi-civilized tribes of central South American Indians is found in Dr H. von Ihering's paper on the *Anthropology of the State of São Paulo, Brazil*, second enlarged edition, published in 1906 by the *Diario Oficial*, São Paulo. The following may also be consulted: Telemaco Borba, Observações sobre os indigenos do estado do P:rana, *Rev. do Museu Paulista*, vol. VI, 1905. Ricardo Krone, Informações Ethnographicos do Valle do Rio Ribeira de Iguapé. *Commisão Geographica e Geologico do Estado São Paulo;* São Paulo, 1908. Consular report on the Paraguayan Indians, by Dr I. Poter, 1907, may also be mentioned here.

[2] I noted at first *trahĭtci*, but the *h* is not pronounced as an aspirate and may have denoted a glottal catch.

kata'mtci, foot
ti'nitci, hair
i'titci, teeth
na'makwa'm, earth, or soil
atiri'm, grass, or leaves, to cover a hut
gwa'piru', sun
āwī'n, bananas
akū'pa, mandioca
atcukā'u, sugar cane
mū'rū', fariñha
pihū'n, *jacú* (a bird)
mi'nitcī'n, *rapadura*, or brown sugar, sweet
feverē're, peanut
tramī'n, *arara* (a large parrot)
tūhī'n, parrot
ino'oko't, resinous labret for unmarried girls
pō'rora', tree giving resin for *inókòts*
piki'n, lip stone of woman
tūkara'man, stone
irī', bark clothes
īki't, knife
īwī', toucan
kā'rati'tci, heart
pana', tree, woods
ī'toatī', *bacury* palm
īmē', *bigua* (snake bird)
kūm, water, river
'ū'ruke'm, Rio Guaporé
a'pīta', Rio São Miguel
āwa'n, vine from which the arrow poison is extracted
tra'pa, there is not, all gone, "forget it," *no hay* (Span.)
trūmi', to sleep
pa'nawu', moon
mapanā'na, lazy, tired
mōkū'm, leaf
jahū'mune, I am going
tū'ro (tō'ro?), hut, or *aldea*
tīki', vessel, bottle, basin
ka'ukrī'gna, image, in looking glass, etc.
tahū't, tree
brahū'nwa, old man, aged
pa'kaawa'mna, I am hungry, I want to eat
kabī'katci, tongue
pawa'nwam, to breathe
pa+ī'wam, coward
titī'wam, to hide
pīraa'wam, to urinate
tcīki'n, *trahaira*, *robaffo* (a fish)
kōtcī', *piranha*, *caribe* (a fish)
parī'ra, *jacunda* (a fish)
ta+ī'vi, *leitão* (a fish)
trā'wa'm, *sorubim*, *pirtado* (a fish)
tamE'k, *pacú* (a fish)
krū'kuvī'n, *corvina* (a fish)
arī'ham, *bagre* (a fish)
imbi', *pirarara* (a fish)
pī'ambā'na, lemon
panmi', orange
patcī'ruwa^{n}, to dress, clothes
prini'nprinā'matci, big toe
tipā'ratci, fingers
ā'rapa'tina, pretty
turi'mā'pa, katydid
ō'hī'ru, gentleman
truhū', gray
namatu', namatō'k, mouse, or rat
nakī'mi'na, very ugly
ini'nka, fear
atī'pitci, beard, or whiskers
hinā'vitci, throat

pitcira′mna, to cut
ˈmiˋmeriˊm, iron, metal
kaˊ+una, I eat
kaˋ+tu, food, hungry
wimāˊna, to smoke
a+īˊwi, tobacco
pīkiˊn, small mountain where the Indians get quartz; lip stones of women
pahūˊnmuwaˊm, man
jeˊmarimaˋ, woman
marahuˊonuwaˋm, child
trakuˊ, bird (also chicken)
īkaˊt, penis
rintiriˊtci, testicles
tubikeˊritci, anus
imāˊukakam, vulva
pawāˊmnakakaˋm, to copulate
karatīˊkakam, mammary glands
imwim, monkey
wāˋräm, *coatá* monkey
kīˋnaˊm, jaguar (the second syllable with rising inflection).
ūtīˊn, star
ōˋkariˊ, belly
pīkuˊriˋnutci, shoulders
karaˊka+u, snake
kava+iˊno, brave(?)
gwiviaˊmo, mosquito
karapaˊpa, *curimata*, *pappaterra* (a fish)
īviˊ, *peixe de cachorro* (a fish)
hīriˊtci, nose
ūˋ+oˊm, fine string
naraˊmnō, peccary, hog
utīˊm, *mutum* (a bird)
hīmiˊ, tapir
tapīˊm, *coati agouti* (a rodent)
kabiˊci, "bad man," dangerous, savage, enemy
āˋaviriˊm, bugio (a monkey)
katiˊ, pain, it hurts
gwinīˊhitci, fat
īˋtcēˊ, fire, or flame
taˋ+uhīˊ, honey
tīˊkē, *toquari*, or Brazil, nuts

LINTON, INDIANA

THE VARIETIES, CLASSIFICATION, AND ORIGIN OF MAGIC[1]

By JAMES H. LEUBA

I. The Varieties and Classification of Magic

THE term magic I would restrict to those practices intended to secure some definite gain *by coercitive action* in essential disregard (1) of the quantitative relations implied in the ordinary and in the scientific dealings with the physical world; (2) of the anthropopathic relations obtaining among persons.

Although magic never makes an anthropopathic appeal, it frequently brings to bear its peculiar coercitive virtue upon feeling beings. It aims, then, at compelling souls, spirits, or gods to do the operator's will, or at preventing them from doing their own. In necromancy, spirits are summoned by means of spells and incantations. In ancient Egypt the art of dealing coercitively with spirits and gods reached a high development. Maspero, speaking of a curious belief regarding names, says, "When the god in a moment of forgetfulness or of kindness had taught them what they wanted [the sacred names], there was nothing left for him but to obey them."[2] At Eleusis it was not the name but the intonation of the voice of the magician that produced the mysterious results.[3]

[1] A further discussion of magic and of its relation to religion will be found in the author's book, *A Psychological Study of Religion; its Origin, Function, and Future*, New York, Macmillan, 1912.

[2] Maspero, G. C., *Etudes de mythologie et d'archéologie égyptiennes*, Paris, 1903, Bibliothèque Egyptologique, vol. II, p. 298.

[3] Foucart, Paul, Recherches sur la Nature des Mystères d'Eleusis, *Mémoires de l'Institut*, vol. XXXV, 2d part, pp. 31–32. Cf. Maspero, op. cit., p. 303.

A surprising revival of the belief in the magical power of names came to my notice a few years ago. At a camp-meeting of Seventh Day Adventists in Massachusetts, I heard an ex-cowboy evangelist deliver an impassioned address on the power of the "Word". He showed by many citations from the Hebrew and Christian Scriptures that the Book did not teach the direct action of God and Christ, but that whatever they did was accomplished through the power of the Word. It was by the Word, not by God, that the world was created, and it was by believing in the Word that men were saved.

But how should be classed the behavior of a suppliant who attempts by requests, offerings, adoration, or other anthropopathic means to induce a ghost, spirit, or god to give him magical power? The Dieri of central Australia in dry spells "call upon the spirits of their remote ancestors, whom they call Mura Mura, to grant them power to make a heavy rainfall."[1] This behavior belongs clearly to the religious type; but that which follows—the suppliant's use of the magical power secured from the spirit—is magic. A spirit may be asked to use his magical power himself. In that case the suppliant uses the anthropopathic method of bringing about a magical action.[2]

To one who approaches the subject of magic for the first time, the possibility of bringing order into the chaos of magical customs seems remote. Before taking up the origins of magic, we would better gain some knowledge of its many forms. This may be done conveniently by making a critical examination of a widely used classification, in the course of which study it will appear that several important varieties of magic fall outside of this classification.

"If we analyze the principles of thought on which magic is based," writes J. G. Frazer, "they will probably be found to resolve themselves into two: first, that like produces like, or that an effect resembles its cause; and, second, that things that have once been in contact with each other continue to act on each other at a distance after the physical contact has been severed. The former principle may be called the Law of Similarity, the latter the Law of Contact or Contagion. From the first of these principles, namely, the Law of Similarity, the magician infers that he can produce any effect he desires merely by imitating it; from the second he infers that whatever he does to a material object will affect

[1] Frazer, J. G., *The Golden Bough*, 2d ed., vol. 1, p. 86.

[2] Jevons's view differs from this in that for him the magical Power always belongs to a conscious agent. "Magic is the mysterious power of a person or conscious agent to cause injury—or, secondarily, it may be, benefit—to another person who may be at a distance; a power which when exerted is accompanied by, or ascribed to, an exclamation, a gesture or an action indicating and effecting what is willed. To us the exclamation or gesture indicates only what is willed. In the opinion of the savage, who fails to discriminate between the categories of likeness and identity, the action he performs not merely resembles, but is the action which he wills." (F. B. Jevons, Magic, *Proceedings Third International Congress of the History of Religions*, pp. 71–78.)

equally the person with whom the object was once in contact, whether it forms part of its body or not. Charms based on the Law of Similarity may be called Homœopathic or Imitative Magic. Charms based on the Law of Contact or Contagion may be called Contagious Magic."[1]

This classification clearly embraces the larger number of magical practices, especially the injuring of images in order to injure enemies, the simulation of birth to produce child-bearing, the numerous cases of homeopathic magic both in medicine and outside of it; the contagious magic of navel-string and placenta, of wounds and blood, of garments, of footprints, and the like.[2] Yet several types of magic remain outside this classification, or are brought within it only by extremely far-fetched explanations. "The Bushmen despise an arrow that has once failed of its mark; and, on the contrary, consider one that has hit as of double value. They will, therefore, rather make new arrows how much time and trouble soever it may cost them, than collect those that have missed and use them again."[3] Similarly other tribes attach a special value to a hook that has caught a big fish. One might bring the mental process involved here back to Frazer's second principle, Contagious Magic: "Things that have once been in contact with each other continue to act on each other at a distance after physical contact has been severed." But it is possible to make a simpler explanation than the ascription to the hook of a specific power acting telepathically upon fish. Nothing need be involved here, it seems to me, but the conviction that something that has happened once is likely to happen again. No principle is simpler and more firmly established than this; it is an imperfect form of this corollary of the Principle of Identity: something that has happened once will happen again under identical circumstances. The savage goes wrong because he thinks merely of the hook, instead of taking into account all the circumstances. But if he

[1] Frazer, J. G., op. cit., 3d ed., vol. I, p. 52. See also Frazer, *Lectures on the Early History of the Kingship*, Macmillan, 1905, p. 54; and A. van Gennep's review of that book in *Revue de l'Histoire des Religions*, 1906, vol. LIII, pp. 396–401.

[2] See for illustrations, *The Golden Bough*, 3d ed., vol. I, pp. 55–214.

[3] Lichtenstein, M. H. K., *Travels in South Africa*, vol. II, p. 271, quoted by Lord Avebury, *Origin of Civilization*, 6th ed., p. 34.

prizes the hook, not simply because it has already caught fish, but because he thinks of the hook as possessing an attractive power over fish, the mental process at the root of his action is another and a more complex one; he now believes in action at a distance.

Considered psychologically, the behavior of the savage when he prefers the successful hook may thus be of two quite distinct kinds. The magic based upon the simple conviction that what has happened once is likely to happen again finds no place in Frazer's system; for the two branches of magic that he recognizes "may conveniently be comprehended under the general name of Sympathetic Magic, since both assume that things act on each other at a distance, through a secret sympathy, the impulse being transmitted from one to the other by means of what we may conceive a kind of invisible ether."[1] There remains the question of fact. Does the savage act on these two principles, or only on the one mentioned by Frazer? Facts and arguments will be offered below in support of the former alternative.

Frazer's classification may again prove inadequate in regard to certain dances performed by the women when the men are engaged in war. "In the Kafir district of the Hindoo Koosh, while the men are out raiding, the women leave their work in the fields and assemble in the villages to dance day and night. The dances are kept up most of each day and the whole of each night. . . . The dances of these Kafirs are said to be performed in honor of certain of the national gods, but when we consider the custom in connection with the others which have just been passed in review, we may reasonably surmise that it is or was originally in its essence a sympathetic charm intended to keep the absent warriors wakeful, lest they should be surprised in their sleep by the enemy."[2] According to the author of *The Golden Bough*, this practice would thus fall under the Law of Similarity, to which he gives, as we have seen, a double form. It is the first alternative that applies in this case, "like produces like": the keeping awake of the women causes the men to keep awake. This is a possible explanation. But it is

[1] Frazer, J. G., op. cit., 3d ed., vol. I, p. 54.

[2] Ibid., pp. 133–134.

noteworthy in the other instances given by Frazer[1] that the stay-at-homes are not simply trying to keep awake but that they are doing many other things, not all of which can be interpreted as mimetic magic (like produces like).

It seems very likely to me that the primary cause of the dancing is not the belief that the keeping awake will make the warriors wakeful, but the excitement and anxiety under which the women would naturally labor while their husbands are fighting. A state of high tension may be expected to work itself off, not only according to a law of "like produces like," that is, of contagion, but in all sorts of spontaneous activities. The facts appear to agree with this theory. The dance is not kept up night and day in every tribe, and in most of them, so far as my information goes, there does not appear to be any deliberate purpose of resisting sleep. Nor do these women use dancing alone; in some tribes they refrain from sexual intercourse, believing that if they do not their husbands will be either killed or wounded. In certain islands the women and children are forbidden to remain inside the houses, or to twine thread or weave. If one turns to the savages' own explanation of their actions, one finds great variation. I do not discover in Frazer that any tribe gives the interpretation that he suggests; but he reports that the Yuki Indians say that if they dance all the time "their husbands will not grow tired." In Madagascar the women say that by dancing they impart strength, courage, and good fortune to their husbands. Why bring these various ceremonies back to an intention of keeping the warriors awake? Some of the actions may be inspired by that purpose, but why all of them? Let us say, rather, that the anxiety of the women tends to work itself off in spontaneous movements, some of them having, in the beginning at least, no mimetic or telepathic connection with the fighting of the husbands. They simply dance or jump up and down for relief, and the relief felt leads to the repetition of the movement. Thus the dancing habit is formed.

Now if the women dance while they are filled with a desire for the success of the men in war, does not our knowledge of

[1] Frazer, ibid., pp. 131–134.

psychology lead us to expect the formation of a causal connection between dancing and the success of the warriors? At first this connection will probably be regarded as general, and not as a specific relation between depriving oneself of sleep and keeping awake the warriors. The dancing, at this stage, will be a magical ceremony of the simplest sort. But certain mental tendencies readily lead to modifications of the primitive dancing. The minds of the dancers will at times be filled with images of the fighting, and these images will tend to shape the movements. In this way mimicry of fighting may take the place of the original dancing. Among the Tshi-speaking peoples of the Gold Coast, for instance, "the wives of the men who are away with the army paint themselves white, and adorn their persons with beads and charms. On the day when a battle is expected to take place, they run about armed with guns, or sticks carved to look like guns, and taking green pawpaws (fruits shaped somewhat like a melon), they hack them with knives, as if they were chopping off the heads of the foe."[1] In the Queen Charlotte islands, "when the men had gone to war, the women at home would get up very early in the morning and pretend to make war by falling upon their children and feigning to take them for slaves." Certain tribes went as far as to scourge severely two lads, by way of helping the warriors.

If any of these dancers accounted for the practice by saying that keeping awake helped warriors to remain watchful, I should look upon this statement as an afterthought. The idea of the danger of surprise to the sleeping men would readily enough connect itself with the dancers' loss of sleep, a loss arising from the dancing, which is itself an expression of anxiety.[2]

Perhaps the largest and most important class of magic not provided for in the classification we are considering is Will-Magic. Here is one instance taken from ancient India: In order to protect his belongings from destruction, the Buddhist monk is directed to make a "firm resolve," saying, "For the space of seven days

[1] Frazer, J. G., op. cit., 3d ed., vol. I, p. 132.

[2] On dancing and its relation to primitive religion, see Irving King, *The Development of Religion*, 1910, pp. 108–112.

let not this and that article be burnt by fire, borne away by a flood, blown to pieces by the wind, carried off by robbers, or eaten by rats and the like. . . . Then for the space of seven days no harm will touch them."[1] This is not a request addressed to a spirit, but a "firm resolve" that the wish expressed shall be realized. In the Kei islands, when a battle is in progress, the women wave fans in the direction of the enemy and sing, "O golden fans! Let our bullets hit, and those of the enemy miss."[2] The essence of Will-Magic is the belief that an exertion of the will takes effect at a distance. This kind of magic may or may not be complicated by the addition of magical elements of another type.

Can Will-Magic be classed under Frazer's Law of Similarity? This law is expressed in a double form: "Like produces like," and "An effect resembles its cause." From this law, we are told, the magician infers that he can produce any effect he desires merely by imitating it. But imitation is not in the least a requirement of Will-Magic, although it may be superadded. The formula "like produces like" means, if it means anything, that because two things have elements in common,—shape, color, etc., what happens to one will happen to the other also. Nothing of this is necessarily involved in Will-Magic. The other form of the law, "an effect resembles its cause," applies no better. It means that if you want, for instance, a tumor to dry up, you can succeed by causing something else to dry up; or if you want jaundice to disappear, you can succeed by making the yellow color of some object, a flower, for instance, vanish. In these cases the effect you have produced becomes the cause of a similar effect.

It must be observed here that these two formulations of that which is given by Frazer as one law represent each a different mental process. If the savage is aware of this difference, the two mental processes should not be included under one principle. To do so seems to me to obliterate distinctions, rather than to bring order by means of a helpful generalization. If primitive man does not

[1] *Pali Texts, Visuddhi-Magga*, chap. XXIII, taken from *Buddhism in Translation*, Henry C. Warren, Harvard University Press, 1896, p. 385.

[2] Frazer, J. G., op. cit., 2d ed., vol. I, p. 33.

discriminate, then the distinction has no application to the mental processes involved in savage magic.

Although I feel confident in affirming that Frazer's classification needs completion, I do not claim that the following one is adequate.

1. *Principle of Repetition.*—Something that has happened once is likely to happen again. A successful arrow will meet with further success, and one that has failed with further failure. No idea of a telepathic power is involved here.

2. *Principle of Transmission of an Effect from one Object to Another.*—Sympathetic Magic. An action taking place upon an object will take place also upon another object when the two objects are connected with each other in the mind of the magician. The connections may be of several kinds. I mention three of these: (*a*) The objects bear a likeness to each other (association by similarity): injuring the likeness of a thing injures the thing itself. (*b*) The objects have been or are in contact (association by contiguity): whatever is done to a tooth once belonging to a person will happen to the person himself. A variation of this form of magic is seen in the custom of rubbing oneself with a part of a powerful and courageous animal in order to acquire these traits. (*c*) The objects have been in the relation of cause and effect: cooling the arrow which has inflicted a wound will prevent inflammation of the wound.

In this class of magic an attraction or a telepathic influence is exerted between objects.

3. *Principle of Efficiency of Will-Effort.*

Other systems of classification are of course possible. A classification according to the nature of the Power involved in the magical operation and the relation of this Power to the magician appears to me to have considerable merit, so I add it here.

Class I.—Practices in which there is no idea of a Power belonging to the operator or his instrument, and passing thence to the object of the magical art. To this class belong many instances of so-called Sympathetic Magic,[1] many of the taboo customs; most modern

[1] Hang a root of vervain around the neck in order to cause a tumor to disappear; as the plant dries up, so will the tumor. If the fish do not appear in due season, make one of wood and put it into the water. Keep the arrow that has wounded a friend in a cool place, so that the wound may not become inflamed.

superstitions,—those, for instance, regarding Friday, the number thirteen, horseshoes, planting when the tide is coming in. In these instances the effect is thought to follow upon the cause without the mediation of a force passing, let us say, from the magician to the wooden fish placed in the stream and thence to the living fish. An illustration of this class of magic has already been given in the old lady's belief that good luck would come to a household as the result of sparrows having fallen down the chimney. The gambler who believes in his "luck" does not usually conceive of it as a Power in any true sense of the word. Several facts drawn from child life, which point to this same conclusion, will be noted presently.

Divination by casting lots or otherwise, when a spirit or god is not supposed to guide the cast, may be included here as a subdivision. The aim of divination is to secure an item of knowledge for the magician, while the other practices of this class are calculated to produce effects of some other kind. But in neither case does there exist the idea of a Power mediating between the thing sought and its antecedent.

Class II.—Non-personal Powers are believed to belong to the magician himself, or to particular objects, such as the magician's instruments, and to pass from these into other objects, or to act upon them so as to produce certain effects. If the magician himself possesses this force, he does not think of it as identical with his "will," or even as intimately connected with it.

Howitt relates that some native Australians begged him not to carry in a bag containing quartz crystals a tooth extracted at an initiation ceremony. They thought that the evil power of the crystals would enter the tooth and so injure the body to which it had belonged.[1] Many charms have a potency of this nature, while others have an animistic significance; that is, they involve the action of spirits, and so do not belong here. Eating the fat of a brave and strong animal, or rubbing oneself with it, in order to gain

[1] *Journal of the Anthropological Institute*, vol. XIII (1884), p. 456, quoted by Frazer.

courage and power, is an act belonging to this second class, as are also most cases of Contagious Magic.

There seems to be among all peoples a stage of development at which a Power like that described above is conceived clearly enough to be given a name; it is called by some tribes in North America, for instance, *Wakanda*, and *Mana* in Melanesia. This variously named non-personal Potency is the efficient cause of by far the greater part of the magical practices.

Class III.—Will-Magic. This includes the cases in which the magician feels that his will-effort is an efficient factor. Under this head usually fall spells, incantations, and solemn curses. A man who says to the magic spear, "Go straight and kill him," feels no doubt that by these words, in which quivers his whole soul, he directs the spear on its errand of death.

When discussing the origin of non-personal Powers, we saw how early man's attention is directed to his will-efforts, and how very soon he attempts to turn his "will" to account in the magical way. Among the North American Indians, sending forth one's thought and will is a common practice. Miss Fletcher tells us that, "When a race is taking place, a man may bend his thoughts and his will upon one of the contestants . . . in the belief that this act, this 'sending of his mind,' will help his friend to win."[1] In this and similar cases the will-power itself seems to perform the magical deed; while more commonly, perhaps, the spell or incantation "carries" one's will to another person, who is then compelled to act according to the desire of the magician.

The importance of this class of magic is so great that Marett has raised the question as to whether an accompanying spell is not an indispensable part of "perfect" magic;[2] and F. B. Jevons follows him in connecting magical power in general with the sense of one's own energy.[3] In my opinion, this exercise of the will is the characteristic of only one class of magic. In magic as well as in religion,

[1] Fletcher, Alice C., Notes on Certain Beliefs concerning Will Power among the Sioux Tribes, *Science* (New York), N. S., V, 1897, pp. 331, 334.

[2] Marett, R. R., *The Threshold of Religion*, pp. 52 et seq.

[3] In the chapter on the origin of the idea of non-personal power, I have al ready argued against the view that will-magic is the primary form of magic.

we must, it seems to me, admit several independent origins. What follows will, I hope, be conclusive on this point.

In this attempt at classification, I would not give the impression that the conceptions of the savage are clear and definite. On the contrary, I hold them to be hazy and fluid. What appears to him impersonal at one moment may suddenly assume the characteristics of a spirit. *Mana*, for instance, although usually an impersonal force stored in plants, stones, animals, or men, at times takes on truly personal traits. One should not be surprised to meet with cases that belong to several classes. The following is a good instance of the mingling of will-magic with other types. "The ancient Hindoos performed an elaborate ceremony, based on homeopathic magic, for the cure of jaundice. Its main drift was to banish the yellow color to yellow creatures and yellow things, such as the sun, to which it properly belongs, and to procure for the patient a healthy red color from a living vigorous source, namely, a red bull. With this intention, a priest recited the following spell: 'Up to the sun shall go thy heart-ache and thy jaundice: in the colour of the red bull do we envelop thee! We envelop thee in red tints, unto long life. May this person go unscathed and be free of yellow colour! . . . Into the parrots, into the thrush, do we put thy jaundice, and furthermore, into the yellow wagtail do we put thy jaundice.' While he uttered these words, the priest, in order to infuse the rosy hue of health into the sallow patient, gave him water to sip which was mixed with the hair of a red bull; he poured water over the animal's back and made the sick man drink it; he seated him on the skin of a red bull and tied a piece of the skin to him. Then in order to improve his colour by thoroughly eradicating the yellow tint, he proceeded thus. He first daubed him from head to foot with a yellow porridge made of turmeric or curcums (a yellow plant), set him on a bed, tied three yellow birds, to wit a parrot, a thrush, and a yellow wagtail, by means of a yellow string to the foot of the bed; then pouring water over the patient, he washed off the yellow porridge, and with it no doubt the jaundice, from him to the birds. After that, by way of giving a final bloom to his complexion, he took some hairs of

a red bull, wrapt them in gold leaf, and glued them to the patient's skin."[1]

II. The Origins of Magical Behavior

The idea of non-personal Powers is no more synonymous with magic than the idea of great, unseen, personal beings is synonymous with religion. If there is to be a magical art, ways and means of using the Power must be produced. How did the apparently endless variety of magical practices come to be? Most of them will be accounted for by the following principles of explanation. They are of unequal importance, but each accounts, it seems to me, for a class of magic.

(*a*) Children often amuse themselves by making prohibitions and backing them up with threats of punishment. "If you do *this*," they say, "*that* will happen to you." The "this" and the "that" have usually no logical connection, nor does the child have any thought of a particular power or agent meting out the punishment.

It is important to remember in this connection that what is done in the make-believe spirit by one person is often taken seriously by another, independently of any empirical verification. A little girl, seven years of age, was told that killing a snail would cause rain. She immediately accepted the statement, and rational arguments did not take the idea out of her head. How many of the senseless superstitions of the savage arose in this way we shall never know. It seems probable, however, that many of the commands, precautions, and prescriptions in the life of the savage have had this origin; for there is frequently no logical connection between the deed forbidden or prescribed and the thing to be secured. I have in mind certain taboo customs, parts of initiation ceremonies of the Australians,[2] regulations governing hunting, and the like. A good instance of the last is found among the Central Eskimo: certain kinds of game must not be eaten on the same day; none of the deer's bones must be broken during skinning; and bits of the animal must be buried in the ground or placed under stones. In

[1] Frazer, J. G., op. cit., 3d ed., vol. I, p. 79.

[2] Spencer and Gillen, *Native Tribes of Central Australia*, London, 1899, chap VII–IX.

many cases a fuller knowledge would undoubtedly disclose reasons of utility, real or imaginary, for these magical practices; but that this would be true in every instance seems an unjustifiable assumption. The fact that the savage is usually ready with reasons for his behavior is no proof that these reasons lie at the basis of the practices. The explanations may be afterthoughts.

(*b*) It seems good psychology to hold that certain magical practices originated in threats of untoward happenings made for the purpose of preserving things vital to the life and prosperity of the tribe,—for instance, the authority of the chief, and the sanctity of the marriage relation. The magical beliefs which enforce continence on the part of the wives of men engaged in war appear to have had this origin. The punishment may be anything which is regarded as efficacious. In Madagascar conjugal fidelity is enforced by the threat that the betrayed husband will be killed or wounded in the war; among the indigenous tribes of Sarawak, the belief is that the camphor obtained by the men in the jungle will evaporate if the women are unfaithful; while in East Africa, the husband will, in the same eventuality, be killed or hurt by the elephant he is hunting.[1] The high sanction which the requirements of social life give to beliefs of this kind is readily understood.

The mental attitude out of which these beliefs arose need not be regarded as a deliberate intention to deceive the women. One should bear in mind the half make-believe, half serious attitude of children in their intercourse with one another. Yet I do not think it impossible that beliefs of this sort have originated in purposive deception. Spencer and Gillen[2] relate of the most primitive people known to us, the Arunta of central Australia, that the adult males rule the women and children by means of a bogie called *Twanyirika*.

(*c*) The motive which leads civilized people to make vows may account for certain magical practices. One of the original impulses of human nature seems to be to try to avoid a catastrophe or to secure advantages by promising to do something which would

[1] Frazer, J. G., op. cit., 2d ed., vol. 1, pp. 29–31.

[2] Spencer and Gillen, op. cit., p. 246, note 1. See also *The Northern Tribes of Central Australia*, pp. 491–492.

gratify the person who has control over the event. This motive in its cruder form is a desire to do something meritorious in order to deserve immunity from danger. Customs of continence may have had the origin mentioned above, or they may have arisen from the women's efforts to do something praiseworthy, so that the life of their husbands might be preserved and their success insured.

(*d*) Other types of magical behavior have their origin in the spontaneous response of the organism to specific situations. In states of excitement the liberated energy must find an outlet in movements. To restrain every external sign of intense emotion is unendurable. By the bedside of a sick person one loves, one must do something for him. The "expression" of the excitement is not altogether at random. It takes place according to certain principles.[1] For instance, it is a common fact that even men of culture when under stress of emotion act in the absence of the object of their passion as if it were present. A man grinds his teeth, shakes his fist, growls at the absent enemy; a mother talks fondly to her departed babe and presses it to her breast. The less a person is under the control of reason, the more likely is he to yield to such promptings.

If a happy coincidence were to lead to a connection between such behavior and success in war, these spontaneous actions would become magical, that is, actions performed in the belief that they are of assistance to the warriors. But coinciding fortunate events are not necessary to the establishment of the connection in question. It is psychologically probable that the desire in the mind of the

[1] Compare Irving King: "In innumerable cases they [magical and religious acts] can be shown to be primarily the natural reaction of the psycho-physical organism, almost its mechanical reflex, in situations of strain and relaxation, or to such conditions as require practical adjustments of some sort." Op. cit., pp. 179–188.

In attempting to explain the bodily movements which accompany emotions, Darwin set down three principles, two of which should be taken into account in the consideration of the origin of magical behavior: the principle of actions due to the constitution of the nervous system, and the principle of serviceable associated habit. Charles Darwin, *Expression of the Emotions in Man and Animals*, pp. 28 ff. These principles become, in Wundt's treatment of the matter, the principle of the direct modification of innervation, the principle of the association of related feelings, and the principle of the relation of the movements to sense-representations. W. Wundt, *Physiologische Psychologie*, 5th ed,, vol. II pp. 286–296.

person during the spontaneous activities will lead to a connection between these and the realization of the desire. It is worth while to dwell a moment longer on this possibility. I had occasion to discuss above certain dancing ceremonies. I attempted there to account for the magical dances of the women while the men are at war as due in their original form to a spontaneous expression of restlessness and excitement. Duration and repetition of the excitement would favor its expression in coördinated, intelligible movements—mimicry of fighting, for instance. If now there appears a sense of necessary connection between mimic fighting and success in war, what was a mere spontaneous expression of excitement becomes a magical practice. This step is not impossible, for if, while the dancing goes on, the wish for the success of the warriors is uppermost in the minds of the women, the dancing will probably come to be regarded as a condition of success. This last step would be no more than an expression of the well-known law of association: two things that have been together in the mind tend to recall each other. Thus forms of behavior arising as a release from emotional tensions gradually assume definiteness and become means of exercising magical influence, quite independently of any experimental proof.

Several of the numerous varieties of so-called Sympathetic Magic, particularly the widespread practice of doing to an effigy that which one would like to do to the original, can be accounted for by the addition to the former principles of the following law of mental action. Objects resembling each other become associated in the mind, so that the mind tends to pass from one to the other. Like objects may become to some extent equivalents in mental operations. The fact that the satisfaction to the person laboring under the excitement of anger or any other emotion increases with the similarity of the object upon which he wreaks his vengeance to the person really intended, was probably discovered by chance and led to the making of images and effigies for magical purposes.

(*e*) In the preceding modes of origin, movements and behaviors first appear independently of any magical intention, and afterward acquire a magical significance. But the magical principles soon became disengaged from magical practice. At this point a new chapter opened in the history of the magical art. Magic no longer

arose only by chance, but new forms were created deliberately. From this moment there must have been a tendency to treat, according to more or less definite magic principles, every difficult situation.

Here belong most of the numerous practices that may be classed under the heading "like produces like." That "like produces like" is a law of nature expressed everywhere about us. Cold, for instance, produces cold, and fire engenders fire. The frequent spreading of infectious diseases among vegetables, animals, and men seems quite sufficient to suggest this belief. The attention of the savage would naturally be drawn very early to that relation, because of the many striking and dangerous forms it takes. Now, as he is quite unable to distinguish among the different agencies involved in the various experiences of this sort, he cannot draw the line between the "likes" that really produce "like" and those that do not; hence his very strange expectations. And as it is often impossible to obtain or manipulate the objects possessing the quality desired, the whole comes to be replaced by a part, or even by a symbol, which is treated as if it contained the power of the whole. For example, eating or wearing a part of a courageous or powerful animal makes one bold or strong, or protects from danger; rubbing the chin of a young man with a rat's totem makes the hair grow, etc.

Another origin of the same class is suggested by an interesting observation made by Sully.[1] A little girl thought that making her hair tidy would stop the blowing of the wind. The wind disheveled her; conversely, putting her hair in order would make the wind cease. Similarly some children imagine that since the wind produces whistling sounds, whistling will produce wind. The second of two successive events is thought to be able to reproduce the first.

In attempting to demonstrate the priority of magic to religion, Frazer writes: "Magic is nothing but a mistaken application of the very simplest and most elementary process of the mind, namely, the association of ideas by virtue of resemblance or contiguity,

[1] Sully, J., *Studies of Childhood*, 1896, p. 80.

while religion assumes the operation of conscious or personal agents, superior to man, behind the visible screen of nature. Obviously the concept of personal agent is more complex than a simple recognition of the similarity or contiguity of ideas. . . . The very beasts associate the ideas of things that are like each other or that have been found together in their experience. . . . But who attributes to the animals a belief that the phenomena are worked by a multitude of invisible animals or by one enormous and prodigiously strong animal behind the scenes?[1] It is undoubtedly true that the mind of man tends to pass from one object to others similar or present at the same time; but this psychological fact does not in itself account for magic. The mind of animals is regulated in like manner. In the spring the sight of a feather makes the bird "think" of nest-building, and the smell and sight of the master's coat probably brings the master to the dog's mind. Yet animals do not practise the magical art. This fact shows the insufficiency of "a simple (mistaken) recognition of the similarity and contiguity of ideas" as an explanation of the origin of magic. If an animal had had his attention drawn to the color of carrots and jaundice, he might observe the color likeness between them; and also "coat" and "master" might follow each other in a dog's mind. But in order to treat the coat as he would the master, or to eat carrots for the cure of jaundice, the dog must have, in addition to the association, the belief that whatever is done to the coat will be suffered by the master, and that the eating of carrots will cure the disease. The existence of these ideas, together with their motor and affective values, makes magic possible. Frazer seems to have overlooked this fundamental difference between mere association of ideas and the essential mental processes involved in magic. This difference may be further illustrated by the instance of a dog biting in rage the stick with which he is being beaten. He is indeed doing to the stick what he would like to do to the man; but in attacking the

[1] Frazer, J. G., op. cit., 2d ed., vol. 1, p. 70. Oldenburg (*Die Religion des Veda*, Berlin, 1894) was first, I believe, in holding to a pre-religious magical stage of culture. But it is Frazer who first made a clear separation, not only between magic and religion, but also between magic and the belief in spirit-agents.

stick he does not think that he is injuring the man. His action is blindly impulsive, while the form of magic in question involves the purpose of inflicting injury on something else than the stick and the belief that the injury is actually done.[1]

If magical actions cannot be deduced simply from the principles of association, they can at least be classified according to the kind of association they illustrate. For although the various ideas brought together in magic, in a relation of cause and effect, are frequently said to have come together by "chance," some of the conditions under which they have in fact become connected are expressible in the universal laws of association; namely, association by similarity or contrast, by contiguity or spatial opposition, and by emotional congruity or disparity. Whenever magical acts have been classified, it has been mainly with reference to the kinds of association involved in the mental processes. But every kind of activity involving mental operations falls in some of its relations under the laws of association, hence these classifications are relatively unfruitful. I have attempted, therefore, to group magical practices according to a factor of greater significance, namely, the nature of the power involved.

BRYN MAWR COLLEGE
BRYN MAWR, PENNSYLVANIA

[1] Cf. R. R. Marett, From Spell to Prayer, *Folk-Lore*, vol. XV (1904), pp. 136–141, reprinted in *The Threshold of Religion*, pp. 44–48.

DISCUSSION AND CORRESPONDENCE

METHOD IN THE STUDY OF TOTEMISM

Is there any human institution which can be safely called "Totemism"? Is there any possibility of defining, or even of describing, Totemism? Is it legitimate—is it even possible, with due regard for "methodology" and logic—to seek for the "normal" form of Totemism, and to trace it through many protean changes, produced by various causes, social and speculative? I think it possible to discern the main type of Totemism, and to account for divergences.

Quite the opposite opinion appears to be held by Mr A. A. Goldenweiser in his "Totemism, an Analytical Study."[1] This treatise is acutely critical and very welcome, as it enables British inquirers about totemism to see themselves as they appear "in larger other eyes than ours." Our common error, we learn, is this: "A feature salient in the totemic life of some community is seized upon only to be projected into the life of the remote past, and to be made the starting-point of the totemic process. The intermediary stages and secondary features are supplied from local evidence, by analogy with other communities, or 'in accordance with recognised principles of evolution' [what are they?[2]] and of logic. The origin and development, thus arrived at, are then used as principles of interpretation of the present conditions. Not one step in the above method of attacking the problem of totemism is logically justifiable."[3]

As words of mine are quoted in this trenchant passage, I take up the gauntlet thrown down by the young American methodologist. I mean to defend the method of my own studies and to examine the merits of that practised, or preached, by Mr Goldenweiser. But first I must explain that Mr Goldenweiser apparently objects to any search, at present, for a single starting point of totemism. Mr Frazer has, at different times, selected different starting points. I have remained constant to one, namely the adoption or acceptance by early human kindred groups, of the totem names, animal, vegetable, or others. Mr

[1] *Journal of American Folk-Lore*, April–June, 1910.

[2] Can Mr Goldenweiser need a reply? Does he not know, *e. g.*, how change from female to male descent works in totemic evolution?

[3] Loc. cit., p. 280.

Goldenweiser asks, "Would not Lang admit that other features may also have been the starting point?" If he means that totemism may have had different starting points in, say, Australia, Africa, Melanesia, and America, I answer, "No!" and will later give my reasons. If he means, "Will I admit that totemism may have begun at some one other starting point than that which I have chosen" (the acceptance or adoption by kindred groups of totem-names), I answer, "Certainly! I will grant *that*, if you will tell me what starting point *you* choose, and sketch for us the processes of advance from your starting point. If your starting point seem the better, if your hypothesis colligate all the facts more successfully than mine, I am your obliged disciple."

Mr Goldenweiser does mention three starting points, adding "or what not." But I want to know "what" or "which" starting point, not "or what not." His three starting points I considered, and found them vague and unworkable. In one case the starting point was post-totemic (the myth of "descent from an animal," used by some totemists to explain why they are totemic). The other two, "animal taboos," or "primitive hunting regulations," themselves needed hypotheses to explain their origin, and before proceeding to hypotheses it would be necessary to know *which* animal taboos and *which* hunting regulations Mr Goldenweiser has in his mind as perhaps feasible "starting points." As a matter of fact, Dr Roth, in his *Ethnology of Northwest Queensland*, has tried to make economic taboos on certain articles of food (which he finds in his region of Australia) the starting point of a wide theory. But great as is the debt of Anthropology to this very exact inquirer, I am not aware that his views have been accepted, and I have not been able, from his starting point, to make any progress toward a theory of the evolution of totemism.

Dr Roth's suggestions are commented on by Mr Frazer.[1] Dr Roth found, not that each totem-kin in his tribes abstained from a given list of edible objects (indeed he seems to have observed no totem-kins) but that the members of each matrimonial "sub-class," four in all, were bound to such abstinence. The tabooed animals vary in each sub-class. Wind and rain are tabooed to sub-class Wungko, — no serious deprivation! Mr. Frazer inclines to suppose (and the suggestion is most probable) that, as the four sub-classes are certainly a later addition to the matrimonial law of the two phratries, the list of tabooed animals in each case represents the class of the totem-kins that once were in a sub-class. To each totem-kin, *as such* (as a general rule),

[1] *Totemism and Exogamy*, vol. I, pp. 136, 137, 522–524, 526–528.

only one object, namely its totem, is tabooed. Let the later sub-classes swamp the earlier totem-kins and every person in each sub-class is tabooed from all the objects which were the totems of its totem-kins. I put the curious and anomalous case (the explanation is only a working hypothesis) in my own words. It is plain that I cannot look for the origin of totemism in a later and non-totemic institution, that of the sub-classes, unknown except in Australia, and there a distinct refinement upon the widespread institution of exogamous phratries. I have considered every suggested possible source or origin of totemism, and find that I can work out a series of hypothetical processes of development only from the association of a given animal, plant, or what not, with a given exogamous kin. Grant me that much, and I think I can trace all the known varieties of development to special causes. (Reports of totemism from Western Australia are not distinct enough, as yet, for treatment.) I cannot expect Mr Goldenweiser to oblige me by showing how a theory which accepts any one of his three suggested starting points, or any other, would work, because he does not (if I understand him) believe that totemism had but a single starting point. In him this is natural, for he appears to hold that totemism is not what he calls "an integral phenomenon," that it has nothing which can be styled a "type", and that no law of development from a type of totemism can as yet be discovered. This is what I conceive him to mean.

As against Mr Frazer's views, or my own, Mr Goldenweiser advances an argument which, to any one not intimately familiar with the subject, seems final and crushing. He exhibits a tabular view of the "features" of totemism and exogamy (or rather of the features of two various societies in which totemism and exogamy exist) in the tribes of Northwestern America, and in the Arunta nation of central Australia. The differences, not the resemblances, he says, are "great and numerous," and they must appear very convincing to the general reader. I present Mr Goldenweiser's tabular form, and add comments in brackets.

TOTEMISM IN BRITISH COLUMBIA AND CENTRAL AUSTRALIA

	BRITISH COLUMBIA	CENTRAL AUSTRALIA
Exogamy	Totemic phratries (Tlingit)	Phratries
	Totemic clans (Haida, Tsimshian, Northern Kwakiutl). [By Haida "clans" we are to understand "phratries"; by Haida "families" we are to understand "clans."]	Classes
		Totem clans [None] (generally not independent exogamous units)
		[Not exogamous at all in central Australia]

Totemic names	Phratries (Tlingit) (Haida)	
	2 of 4 clans (Tsimshian)	All totem clans [No totem clans in central Australia]
	Clans (Northern Kwakiutl)	
Taboo	Non-totemic taboo, common; totemic, absent	Numerous totemic and non-totemic taboos
Descent from the totem	Absent (Tlingit, Haida, Tsimshian)	
	Occurs (Kwakiutl and farther South)	Universal [Unknown. Incarnation is not descent]
Magical ceremonies	Not associated with totemism	Intimately associated with totemism
Reincarnation	Not associated with totemism	Intimately associated with totemism
Guardian spirits	Intimately associated with totemism	Not associated with totemism.
Art	Actively associated with totemism	Passively associated with totemism
Rank	Conspicuous (in individuals and groups)	Absent
Number of totems	Small	Large

Mr Goldenweiser compares the totemism of his American tribes with that of the Australian Arunta. Now, *their* case is absolutely unique. Among the Arunta nation certain speculative ideas, common to many northern and northwestern Australian tribes, *plus* an absolutely unique superstition connected with manufactured objects, *churinga nanja*, have caused an unparalleled abnormality in their totemism. Theirs is as unlike that of any other Australian tribes as that of these Australian tribes is like the totemism of the Wyandots or the Menominees. It is rather Mr Goldenweiser's task to explain the amazing resemblances in the totemisms of peoples so remote from each other as certain tribes of America and Australia than my business to explain why the totemism of the Arunta differs so widely from that of the Tlingit or the Haida. But these differences are of easy explanation. The resemblances cannot be accounted for by fortuitous coincidences.

My own notion of method demands that we should not only examine two totemisms widely different, but also totemisms closely resembling each other in parts of the world very remote from each other. Two forms of totemism, say Wyandot and Menominee in America, Barkinji and Ta-tathi in Australia, also present differences. My method would consider the social and artistic conditions of both sets of tribes and ask, Have not different social conditions expressed themselves in the differences of the totemic development? Concerning the social conditions themselves we have in each case the best possible evidence.

What is illogical, unscientific, and illegitimate in this method? If we take the Christianity and church government of, say, the sixth to the eighth centuries, on the continent and in Scotland and Ireland we find very considerable differences. Then examining the social conditions of Ireland and those of France, Italy, and Spain, we find great differences, and we see precisely how the social conditions of Ireland produced the differences between the Irish and Roman forms of Church government.

Before entering into details I ought first to excuse myself for "projecting into the remote past a feature salient in the totemic life of some community," and "making it the starting point of the totemic process." I did not select "a feature salient in the totemic life of *some* community" (such as the "conceptional totemism" of the Arunta), but I chose a feature salient in *all* totemic communities, namely, the animal, vegetable, and other such names of totem kindreds. If an exogamous kindred has not a totemic name, why are we to call the kindred "totemic"? One may be able to prove historically that it once was totemic, but if it have no totem and totem name, it is not totemic now.

Mr Goldenweiser, if I understand him, thinks that here I am arguing in a circle. He says, "A simple way of proving that exogamous clans with totemic names are the essentials of totemism is to define totemism as exogamous clans with totemic names."[1]

This is simple indeed! It is arguing in a circle. But here I am not trying to "define totemism." I am asking, "What is a totemic clan?" How can I call a clan "totemic" (however exogamous it may be), if it has neither totem nor totem name?

Mr Goldenweiser himself insists that this is a thing which I must not do: I must not call Tlingit clans "totemic", as they usually have not totemic names (or, now, totems). In my opinion, as we shall see, the exogamous clans of the Tlingit tribe in America have recently been totemic. But according to the latest information (taken in 1904) the clans have not totems now, nor even totemic names. This is a source of joy to Mr Goldenweiser, because, if these exogamous Tlingit "clans" have not totemic names, that makes a difference between them and most, not all, Australian "clans". Therefore I must not cheat by calling the Tlingit "clans" "totemic", or "possessors of totemic names"—and I abstain from so doing. The Tlingit are no longer totemists, but Mr Goldenweiser includes them in a survey of British Columbia totemism. Am I to accept as a totemic "clan" a "clan" without a totem name when it suits my adversary; and not when it does not suit him? I fail to see

[1] Quoted from a personal communication.

how I can know an exogamous clan to be totemic when it has neither totem nor totemic name.

I am very far from saying that every exogamous "clan" is now, or must once have been, a totem-kin. When I say "totem-kin" I mean a kin with a totem and a totemic name,—to do so is not to argue in a circle. I add that every totem-kin (or clan) known to me is exogamous, for the Arunta magical sets, or clubs, with totems, are not "kins", and know it; and in the case of the Narrang-ga of York peninsula some of the exogamous "clans" are still totemic in name while the others have ceased to bear totem names and take local names under circumstances perfectly well known.

Mr Goldenweiser, objecting to my defining a totem-kin as a kin with a totemic name (though he will not let me call an exogamous kin without a totemic name a "totem-kin"), raises the question, How are we to style such exogamous *gotras* (or *gots*) in India as have not totemic names, while other *gotras* in the same people have totemic names? My answer is written, but would occupy too much space.

For these reasons I start from the totem name of the totem-kin as an universal feature of such a body; all such bodies (as far as I know) are exogamous, except the Narrang-ga and other peoples who are known certainly to have abandoned exogamy. (The case of the Kurnai and their *thundung* remains obscure; but how the Narrang-ga ceased to be exogamous is known with certainty.) Thus, looking for a starting point of totemism, I choose that universal feature, the totem name. For the origin of exogamy I look in another direction, believing that local groups of kin were exogamous long before they were totemic. As to my definition of totemism, I have come to something very like Mr Frazer's conclusion that, by way of definition, "we may perhaps say that totemism is an intimate relation which is supposed to exist between a group of kindred people on one side and a species of natural or artificial objects on the other side, which objects are called the totems of the human group."[1]

One or two modifications I would make, and an addition. Thus I would say "When I speak of totemism I mean an intimate relation which is believed by certain peoples to exist between their human kindreds (real or supposed) on one side and a species of natural or (infrequently) of artificial objects on the other side, which objects are, by us, called the 'totems' of the human kindreds, while the human kindreds bear their names." I would go farther and add—"In all but

[1] *Totemism and Exogamy*, vol. IV, pp. 3, 4.

two or three cases known to us (which can be proved to be instances of departure from rule), the kindreds which believe in this intimate relation between themselves and an object, natural or artificial, have a law against marrying a person who stands in the same intimate relation to the same object." Mr Goldenweiser will probably say that my phrases are not a definition but a description. At all events they are intelligible, and explain the nature of the phenomena which I investigate.

All I have said is probably anathema to Mr Goldenweiser; is, he may say, "non-methodological" and most unscientific. His plan, we saw, is to draw up a table of totemism among the Indians of the Northwest of North America and another of totemism as it exists among the Arunta of central Australia, and to ask—how we can pretend to find totemism as an "integral phenomenon" when the Arunta may marry within their totem "clans" while the exogamous "clans" of British Columbia have sometimes no totem names?

I may state Mr Goldenweiser's case "for short" in the terms of a friendly critic, Dr Lowie, who writes that "he has been the first to show at length and with irrefragable logic, that totemism cannot be treated as an integral datum," and that his paper is "the prolegomena to all positive attempts at a sane interpretation of totemic institutions."[1] Hitherto, it seems, interpreters of totemism have neither been sane, logical, nor positive in their attempts.

Mr Goldenweiser's is "an American view," "based on methodological principles which are becoming the common property of all the active younger American students of ethnology." From them a decrepit British veteran must have much to learn.

Here follows Dr Lowie's summary of Mr Goldenweiser's way of doing battle. No doubt his summary is more fair than any which an opponent could construct. I add footnotes to Dr Lowie's intention.

According to the traditional view, totemism is an integral phenomenon which is everywhere essentially alike. Thus, in Frazer's latest work on the subject, *Totemism and Exogamy*, the burden of proof is explicitly thrust on the shoulders of those who question the identity of totemic phenomena in different quarters of the globe and who uphold the theory of convergent evolution.[2] In Part I of his paper, "Australia[3] and British Columbia," Dr Goldenweiser has anticipated this challenge. He selects the series of features that are commonly regarded as

[1] R. H. Lowie, A New Conception of Totemism, *American Anthropologist*, N. S., vol. XIII, no. 2, 1911.

[2] I do not know how "convergent evolution" is defined. As a series of chance coincidences? A. L.

[3] By "Australia," central Australia, the home of the Arunta, is meant. A. L.

distinctive of totemism, and compares the forms they assume in the two areas considered. The result is sufficiently striking. On superficial consideration, it appears that the [central] Australian totem group resembles the clan of British Columbia in the exogamic regulation of marriage.[1] But this resemblance is not significant; in both cases the exogamous character of the clan is not a primary but a derivative trait.[2] Because the clans[3] are, in both areas, parts of the larger phratric units, and because these phratries are exogamous, the totem clans must be exogamous, even though the clan, as a clan, may have nothing to do with exogamy.[4] In other features, the totem clans of [central] Australia and British Columbia clearly diverge. In [central] Australia the social importance of the clan dwindles into insignificance as compared with that of the phratry; in British Columbia the clan is the social unit, *par excellence*. On the Northwest [American] Coast there is evidence[5] for the development of the clans from village communities, such as nowhere exist in Australia. Finally, the American clans are graded as to rank—a condition likewise lacking in [central] Australian totemism. In the matter of clan names, what similarity exists is again of a superficial kind. In [central] Australia all clans are named from their totems; in British Columbia clans frequently derive their names from localities. But precisely where the American social divisions (phratries) *are* named after animals, we occasionally find that the eponymous animal is not identical with the crest animal,[6] which is the one that corresponds, in religious function, to the Australian totem. If phratries are compared it is found that those of the Tlingit and Haida bear animal names, but that only a few of the Australian phratry names are definitely known to refer to animals.[7] The view that the totemite is a lineal descendant of his totem is clearly developed in [central] Australia; on the Northwest Coast, on the other hand, there is a fundamental belief in *human* descent: the crest animal is one which has in some way been associated with the human ancestor of the group. Nevertheless, the author points out, there are myths in which the association is very close, and, in one group of traditions, the ancestor is the crest animal transformed. These instances, instead of militating against the author's point of view, constitute in reality strong evidence in support of it. For the myths in question result from the reaction of the guardian-spirit concept upon the basic belief that human beings have human ancestors. Now, the guardian spirit concept is practically foreign to [central] Australia. What

[1] The central Australian "totem group" has no more to do with marriage than with the tariff. A. L.

[2] Here is boldly assumed the hypothesis that phratries preceded exogamous "clans". The central Australian "clan" is not exogamous at all. A. L.

[3] In central Australia, among the Arunta, there are no "clans". A. L.

[4] Nothing in this sentence is true about central Australia. There are no totem clans; each clan occurs in both phratries, now no so-called "clans" are exogamous.

[5] I know no such evidence. A. L.

[6] The "crest animal" has been juggled with by heraldic ambition. A. L.

[7] The translatable Australian phratry names, with one probable exception, are animal names. Only a third of these names have been translated. A. L.

similarity there exists between the [central] Australian and the American myths is accordingly an ideal instance of convergent evolution. There remains the criterion of the taboo against eating or killing totem. Of this phase of totemic life [central] Australia remains the classical example; in British Columbia, on the other hand, not a single instance of totemic taboos has hitherto been discovered, though there is an abundance of taboos of non-totemic character.

A survey of the currently assumed symptoms of totemism in the two areas discussed thus reveals far-reaching differences. It would be artificial, however, to confine the comparison within the limits set by conventional definitions of totemism. If we wish to disabuse ourselves of the preconceptions expressed in these definitions, Dr Goldenweiser insists, we must not neglect to consider those cultural features which are empirically found in intimate association with the criteria generally recognized as totemic. In [central] Australia two elements have risen to so commanding a position within the totemic complex that each has been assumed as the essence and starting-point of [central Australian] totemism generically. These elements are the *intichiuma* ceremonies conducted for the multiplication of the totem animals, and the belief in the reincarnation of ancestral spirits.[1] On the Northwest Coast of America, analogous features are indeed found but they are wholly dissociated from totemic institutions. A parallel condition of affairs is revealed in viewing the dominant traits of social life in northwestern America. The social life of the Kwakiutl is unintelligible without taking into account the groups of individuals sharing the same guardian spirit, while the circumstances incident thereto are dramatized in the dances of the secret societies.[2] In Australia guardian spirits are rare, and, where found, are generally quite distinct from the totems; even when the two concepts do coincide, the guardian-spirit factor is of relatively slight moment. A second trait of special significance in the American area is the relationship of totemism to art, —the saturation of practically all decorative attempts with totemic motives, and the retroactive tendency to give, secondarily, a totemic interpretation to designs purely decorative in origin. This intimate connection is largely dependent on the quasi-realistic style characteristic of Northwest American art. In [central] Australia, where geometrical motives predominate, art has exerted but little influence on totemic life.

The empirical consideration of the totemic complex in the two typical regions dealt with thus establishes the *essential diversity of the phenomena compared*. [My italics.] The dominant motives of [central] Australian totemism are not the dominant motives of Northwest American totemism, and *vice versa*. What resemblances exist are either superficial or are functions of traits not directly associated with totemism. Here, however, the criticism might be made that totemism in the areas selected is not comparable because the American institution

[1] I do not know who is making either or both of these assumptions. Certainly I am guiltless of both. A. L.

[2] The "tradition" is a *post-totemic* myth explanatory of the origin of totemism. A. L.

represents a far later stage of development. "The totem", as the author puts it in anticipation of this stricture, "has become attenuated to a crest, to a symbol; the living, flesh and blood relationship with the totem animal has been transferred into the realm of mythology; and, naturally enough, the taboo on the totem animal has dwindled away and finally disappeared." Dr Goldenweiser's answer is unmistakably clear. "To a retort of that character, I would answer that we may safely assert that there is not one phase of human culture, so far represented in an evolutionary series of successive stages of development, where the succession given has been so amply justified by observation of historic fact as to be safely adopted as a principle of interpretation" (p. 22). The evidence from Northwest America must thus be admitted as coordinate with that from [central] Australia. . . .

Taking the essential proportions here I do say that "totemism is everywhere *essentially* alike," because by *essential* I mean only the existing association between exogamy and the totem name and kin, whether the kins be or be not regimented in phratries. I take no keep of other features "commonly regarded as distinctive of totemism." Thus the Bruces may taboo spiders; "the dog," in the Gaelic proverb, "is the friend of the Macleans" (so J. F. McLennan told me), the Campbells bear the (non-heraldic) badge of the salmon,[1] but none of these clans is a totem clan; nor is any exogamous; and the clans of the Narrinyeri and Euahlayi are certainly totemic, though they kill and eat their totems (the Euahlayi, after a simple rite). I take no keep of the different myths by which totemists explain totemism,—as by descent from the animal, incarnation of a *ratapa* or *erithipa* of the animal; an ancestral adventure with the animal, an intervention of a guardian spirit: the presence of the soul of an ancestor in the animal; the allotment of the animals to the kins by Baiame, or any other fable. Nor do I think it essential to totemism that totem kinsmen should use armorial bearings representative of the animal, or honour it (Wyandot and Tlingit) by making their personal names bear reference to the animal of the clan. When an exogamous clan takes its name from a locality, it is not totemic at all; though in America, Australia, and British New Guinea, I can easily prove that such locally or descriptively named clans have recently been clans of totem names.

Thus my reply is considerably shortened.

I often feel doubtful as to whether or not I understand the kind of English used by Mr Goldenweiser and Dr Lowie: highly abstract as it is. Let us try to translate into correct terms Mr Goldenweiser's rather

[1] Their crest is the head of the boar that slew their ancestor, Diarmaid, but crests did not come into heraldry before the fourteenth century.

dogmatic utterance. "There is not one phase of human culture" (may I assume that totemism is a phase of human culture?) "so far represented in a series of successive stages of development. . . ." κτλ. Does this, in the concrete, mean that a series of successive stages of development cannot be traced in totemism? Is the process by which in some of the Dieri and neighbouring tribes *of female descent*, men give their totems to their sons, not traceable? Is the resulting stage in which a man with the *inherited* maternal and *given* paternal totem may not marry a woman, in other respects eligible, if she be of the man's father's totem, not traceable? When, next, we find all northern Australian tribes *of male descent* revering almost equally the paternal and maternal totem, and inheriting property in the female line, but marrying out of the paternal totem only, can we not trace a series of successive stages of development from descent in the female to descent in the male line? These northern tribes are in touch with no tribe of female descent and contaminated by none.

Again, if we find American tribes which have or had totems, and in which members of each kin have badges representing each his totem, and take each their personal names from their totem, are we forbidden to see a further stage of this process when, elsewhere, kins with wealth and rank have animal badges associated more loosely with the kins, because through stress of heraldic vanity and desire of a multiplicity of "crests," one clan usurps the badges of other clans? Meanwhile, in these clans, many, if not all men, take their personal names from that of an animal specially favoured by their clan. Are we forbidden to suppose that the second set of usages is one in a series of successive stages from the first? I understand Mr Goldenweiser's Method to taboo any such supposition. I do not know how any man can hold this view. Taking American totemism generally we see that the very word "totem" (an Ojibway word) does not mean what, none the less, we all call the "totem" of a kin, namely the actual animal associated with the kin; but means the symbol, or device, a work of art representing that animal.[1] Are we to call no clans "totemic" unless they possess such devices, whether in realistic or conventionalised art?

Is it not, again, manifest that the artistic representation of the clan-animal in a painted or sculptured device is necessarily later in evolution than the acknowledged relation of a kin to the animal represented? Is it not equally certain, on Dr Swanton's evidence, later quoted, that the custom by which a rich clan usurps the animal device of a poor clan,

[1] Morgan, *Ancient Society*, p. 165.

perhaps in the opposite phratry, is later than the practice by which in other tribes each clan remained faithful to its own animal device?

I understand Mr Goldenweiser to anwer these questions in the negative: to say that we have no historical evidence (and that no other evidence is good enough) for the succession of the processes mentioned. In Northwestern America we see "the saturation of decorative art with totemic motives." We see quite as clearly the "saturation" of totemism with heraldic art—art displayed in the "crests" or badges of the "clans": these crests represented the special animal of each clan, originally, though,—for historical reasons explained by Mr Goldenweiser's leading authori'y, in the case of the Tlingit tribe,—the passion for heraldry, as we shall see, has robbed some clans and the phratries of the *sole* possession of their animal emblems, and upset the original arrangement.

I understand Mr Goldenweiser to mean that we may be aware, (A) of American tribes, say the Hurons, who had totems of each kin, devices or symbols of each totem, and the usage of taking personal names from the totem. We may also be aware (B) of tribes with no totem kins, but with kins which, *usually*, have each a special regard for a given animal; *usually* have badges of that animal; and *often* or *usually* take their personal names, in each case, from that animal's name. But we are not to be allowed to assume anything so unhistorical as that stage B is one of a series of developments from stage A. This excessive strictness, I think, is not "scientific": I could give it another epithet.

The "successive changes" in this case, I think, are: (1) "Clans," each having an animal with which it is in intimate relation. (2) Art is employed to make works of sculpture representing each such animal for the decoration of members of its clan, for ornaments in their houses, and for the posts beside their houses. (3) The usurpation by members of wealthy clans of the badges or emblems of other clans, and the phratry not their own. (4) A great deal of consequent confusion as to the ownership of these clan badges or emblems: wealthy clans seizing all or many, poor clans having none, and the animal badges being conveyed into the phratry to which they did not originally belong.

The process by which the clan badges got out of the original into the opposite phratry is not that by which Arunta totems are still getting out of the "right" into the "wrong" matrimonial class. But the result is the same, and if the Tlingit clans were known by totemic names, a Tlingit, like an Arunta, might marry a woman of his own totem name, but not of his own phratry: for the distinctive animal badges are now claimed by clans in *both* phratries, in some cases.

Anxious to be economical of space, I must now invite the reader to consult Dr Swanton's account of the Tlingit tribe.[1] Holmberg's account of 1856, used by Mr Frazer in *Totemism and Exogamy* (vol. III, pp. 265–268), is not accessible to me, and I must not cite it at second hand. He is reported by Mr Frazer to give the phratries as Raven and Wolf, each containing clans *which are named after various animals*. If so, here we have, in 1856, exogamous clans of totemic names. I think it is not denied, at least, that each clan had its animal crest? If so, each clan had a special connection with its crest animal. Moreover it is plain from Dr Swanton's report that "theoretically the emblems used on the Raven side were different from those on the Wolf or Eagle side."[2]

Thus, if we may go so far as to say that the crests represented each a special animal associated with its own clan, the clans were once totemic; and the same totem could not and did not appear in both phratries, naturally, as both clans and phratries were and remain exogamous. Moreover in each phratry is a clan (*teste* Holmberg), of the name of the phratry, Wolf in Wolf phratry, Raven in Raven, or a clan bearing the crest of either animal. This condition of affairs is now much broken up, because, as Dr Swanton shows, by exhibitions of wealth and liberality at potlatches, members of rich clans usurp crests and names really in the right of other clans, and even in the phratry not their own. The process is historically demonstrated. It follows that the possession by a man of this or that animal badge or name *is now no safe indication of what woman he may legally marry*.

In consequence, perhaps, of this loss of exogamous value of the animal name, or animal badge; and also in consequence of the now settled life in towns or villages, the exogamous clans are no longer named after the clan animal, but bear descriptive names, or names of localities, real or legendary, just like the exogamous clans of the Massim of British New Guinea. What *their* clan names originally meant is unknown, but two are named after two species of snake, and one after a tree. Meanwhile the Tlingit "often" do what the Wyandot men did invariably, —take their personal names from the special animal of their clan in each case (as Egyptian and Semitic names usually refer to a god, and Highland names often to a saint). Meanwhile too, though Tlingit clans now very seldom have totemic names, the names of the "house groups" of

[1] *Twenty-sixth Annual Report of the Bureau of American Ethnology*, 1904–1905 (published in 1908).

[2] Swanton, op. cit., p. 415. I have carefully analyzed Dr Swanton's report, but have not space to show how far it corroborates Holmberg as reported by Mr Frazer.

each clan are more frequently totemic than not, while even house-names are coveted and contested, and confused.

I ask the reader, Do not the Tlingit (whose clans are no longer totemic) exhibit undeniable signs of having been totemic, and exhibit the processes due to wealth, rank, and heraldic usurpation of names and crests through which they have ceased to be totemic? If they were totemic then they resembled the Australian tribes of the Upper Darling and its *Hinterland*, in the following respects: (1) They had phratries of animal names—Raven and Wolf, Eagle Hawk and Crow. (2) They had in these phratries exogamous clans. (3) Each clan had a totem animal (or a badge representing an animal). (4) Before heraldic usurpations among the Tlingit, no animal crest of a clan appeared in both phratries, as the totem animal of the Australian tribes is in both phratries. (5) Each phratry had within it a totem-kin of its own name, Wolf in Wolf phratry, Raven in Raven phratry, Eagle Hawk in Eagle Hawk phratry, Crow in Crow phratry.

All this is certain, unless it be maintained by Mr Goldenweiser that Tlingit animal names and crests, and animal named phratries, and the presence of the clan animal or badge in the phratry of its name, and the *non*-presence of any totem animal or badge in both phratries, did not arise in totemism, and "came otherwise";—"but how it matters not," as William of Deloraine said. If Mr Goldenweiser takes that line, I have no more to say. But if he does not take refuge in a *non liquet*, then does his method forbid him to tell us how so many resemblances between the totemism of the Australian Mukwara and Kilpara tribes (with female descent like the Tlingit) arose, if the two totemisms did not come from a common starting point, and pass through similar processes of development?

Are we to explain it by "convergent evolution," and does this phrase mean "through a series of flukes"? I have cut my argument down to the bone, and have rather reluctantly excised a study of the totemism of the Massim of British New Guinea, who have exogamous clans assumed to be named after "real or hypothetical localities," "house groups," phratries; each including a clan of its own name; while the clans have each three or four totems none of which appears in the linked or opposite phratry. The Massim are a mixed and migratory people, Papuo-Melanesian, and with them, though they have female descent, respect for the paternal totem has gained much ground on regard for the totem of the mother.[1] This case, with local variations, has resemblances both

[1] Seligmann, *The Melanesians*, 1910.

to the Mukwara Kilpara model, and to that which is now decadent among the Tlingit. Are the resemblances purely fortuitous?

My method may be terribly illogical and unscientific, but, even so, it has enabled me to find out facts that had been unknown or ignored. My hypothesis required that Australian phratries should have totemic names. I proved that one-third of the known Australian phratry names, —the third which can be translated,—have totemic names, with one rather doubtful exception, the "light blood" and "dark blood" of the Euahlayi.

My hypothesis required that each Australian phratry should have in it a totem-kin of the animal of the phratry name. I proved that in many instances where our information was full and native names of the totem animals were given, the case was as, according to my hypothesis, it ought to be. It is not wholly a bad method which leads to discoveries. May the method of Mr Goldenweiser be equally fortunate!

I hope presently to send to Mr Goldenweiser my hypothesis of the origin of all these things, including phratries. But he will see with horror that I "seize on prominent features in the totemisms" of three most primitive Australian "nations," to project them into the past of all totemists with the system of two intermarrying exogamous phratries of animal names. "How bad, and mad, and sad this is," but "it fills the bill." The hypothesis works—that is, things may have occurred as I suppose; if they did the results must have been the state of affairs with which we are familiar.

ANDREW LANG

ALLEYNE HOUSE
ST ANDREWS
FIFE, SCOTLAND

ANDREW LANG ON METHOD IN THE STUDY OF TOTEMISM

MR LANG's broadside attack is always formidable. Having survived its impact, I propose to consider some of his criticisms. Mr Lang's bracketed comments on my Table[1] reveal a terminological misunderstanding. By "Central Australia" I did not mean "Arunta"; following the precedent of Spencer and Gillen, I used the term to cover all the tribes from the Aranda and Loritja in the south to the Anula and Mara on the Gulf of Carpentaria. Not all of the statements in the Central Australia column of my Table are true of all of the above tribes, any more than all of the statements about British Columbia

[1] Totemism, an Analytical Study, *Journal of American Folk-Lore*, 1910, p. 229.

apply to all of the Northwest Coast tribes. In justice to Mr Lang, I may add that I feel in part responsible for the misunderstanding, which could have been avoided had I specified the tribes to which each statement applied, as I have done in the British Columbia column.[1]

Mr Lang makes certain positive assertions about the nature of the totemic complex and the origin of totemism. Before we turn to these, a brief restatement of the main positions of the second part of my *Totemism* may prove useful. Having, in Part I, dealt with two totemic complexes, I then take up some of the individual features, such as exogamy, taboo, etc., and analyze them from an historical and psychological point of view. The provisional conclusion expressed in the summary of Part I is thus confirmed; the features prove to be independent ethnic phenomena; each feature, moreover, may develop from a number of distinct "origins" and may vary in its psychological content. Now, if the individual features are not necessarily totemic, in origin or nature; if, in addition, totemic complexes differ widely in the number and character of their totemic features, then a totemic complex can no longer be regarded as an organic, that is, genetic unit, nor can it be defined by the enumeration of any set of totemic features. Thus the concept is reached that in totemism we deal with a phenomenon of association of various ethnic features, of features essentially heterogeneous in their natures, and independent in their histories. The associations, moreover, which constitute totemic complexes are of a type known in modern ethnology as convergent developments. For the totemic complexes, the final products of totemic processes seem to reveal a far greater degree of resemblance, both objective and psychological, than either the totemic processes or the remote totemic origins.

It will thus be seen that I do not close my eyes to far-reaching similarities in totemic organizations the world over. Mr Lang would have me "explain" these similarities. "It is rather Mr Goldenweiser's task," writes Mr Lang, "to explain the amazing resemblances in the totemisms of peoples so remote from each other as certain tribes of America and Australia, than my business to explain why the totemism of the Arunta differs so widely from that of the Tlingit and Haida" (p. 371). But my primary purpose was not that of explanation. I hope I have made clear that the comparison between one American and

[1] When quoting Dr Lowie's exposition of parts of my *Totemism* Mr Lang adduces further bracketed criticisms of certain statements as to clan exogamy, etc., which are not true of the Aranda (p. 375). In a letter of Feb. 29, 1912, Mr Lang refers to this point. He writes: "Any mistake I made through supposing that Central means of the Centre should be deleted." No further reference need thus be made to the matter.

one Australian totemic complex was made in order to bring out the marked variability in objective and psychological content of totemic complexes as actually found. Evidence from elsewhere served to support this conclusion. Having thus established the position that the specific content of totemic complexes cannot be regarded as their essential characteristic, I then tried to ascertain whether there were not some common feature in all totemic complexes, a feature that could be regarded as definitely symptomatic. I eventually found such a feature in the circumstance that in all totemic organizations we find a differentiation of a group into definite social units—clans—within the limits of each of which the so-called totemic features are socialized. The specific content of the features in each clan is different, but the form they assume is strictly identical in all the social units of the group, which units may thus be described as *equivalent totemic units* the aggregate of which constitutes a totemic organization. In *Totemism and Exogamy Defined: A Rejoinder*[1] I then expressed the belief that this tendency of "totemic" features for specific socialization cannot itself be regarded as a product of convergent evolution but must rather be conceived as a primary socio-psychological fact that may eventually prove to be the means by which the convergent developments of totemic complexes are achieved. Pending much more prolonged and elaborate investigation into the nature of totemic phenomena, all this must needs be very vague and unsatisfactory, but Mr Lang will realize that I am very far from making far-fetched attempts at finding differences where similarities are essential, or from denying the fundamental unity of the totemic problem, notwithstanding the genetic heterogeneity of totemic complexes.[2]

My attitude toward Mr Lang's positive interpretations of totemism flows naturally from the above theoretical positions. "I think it possible," says Mr Lang in the opening paragraph of his critique, "to discern the main type of totemism, and to account for divergences" (p. 368); and again, when referring to non-exogamous totemic clans: "They are deviations from the prevalent type of clans with totemic

[1] *American Anthropologist*, 1911, vol. 13, pp. 589–597.

[2] Mr Frazer in his *Totemism and Exogamy* has repeatedly emphasized the position that a differentiation of a group into clans with totemic features—I should say into "equivalent totemic units"—is a condition *sine qua non* of "totemism". In some other sections of his work, again, he has turned his back on that proposition. The first to draw attention to this side of totemism was Léon Marillier in his memorable articles on "La Place du Totémisme dans l'Évolution Religieuse" (*Revue d'Histoire des Religions*, vs. 36 and 37. *Cf.*, e. g., vol. 37, p. 393).

names plus exogamy. They are exceptions to the rule, and, as such, they prove the rule. They are divergences from the type, and, as such they prove the existence of the type from which they have diverged."[1]

In other places he speaks of exogamous clans with totemic names as "universal" and "normal"[1] features of totemism and of totemism as characterized by exogamous kins bearing totemic names.[1] I have in *Totemism* touched but indirectly on this subject of the *comparative* permanence or variability of the different features of totemic complexes. In principle, I here agree with Mr Lang. I should not, with him, regard exogamy and totemic names as "universal" features of totemism,—Mr Lang is, of course, familiar with the "exceptions,"—but I should endorse the statement that clans with totemic names are, in an overwhelming majority of cases, exogamous. The two traits may thus be called "normal" features of totemism, and totemism may be said to be "characterized" by them. In a purely objective and descriptive sense, we might even use the term "type" in this connection. But would these terminological niceties carry us any farther in the understanding of totemic phenomena? Decidedly not. With or without these terms, we do not get beyond the purely descriptive fact that exogamy and totemic names are the most permanent of the features of totemism. For it does not at all follow from the above considerations that totemism is an "integral phenomenon existing in many various forms," nor that "there *is* 'an organic unity' of the features of totemism, of these two features, the essential features." In order to justify these statements we should be able to demonstrate that it is of the nature of exogamous clans to have animal names, and that it is of the nature of clans with animal names to be, as such, exogamous. This demonstration cannot be made. Exogamous clans may have local names (Haida, Tlingit) or names derived from taboos (Omaha), or nicknames (Crow), or names that are collective forms of the names of ancestors (Kwakiutl), and be none the worse for it. Animal-named clans, on the other hand, whenever their exogamy is derivative, cannot be regarded to have, in their capacity as clans, anything to do with exogamy. From this point of view wide areas where totemic clans are exogamous units, as in Africa and India, would have to be sharply differentiated from other wide areas, such as Australia and part of North America, where totemic clans are associated with the division of a tribe into two exogamous halves. In the latter instances a special investigation would be required in each individual

[1] Personal communication.

case, whether to show that the clans had at a former time been independently exogamous, or that notwithstanding their inclusion in wider exogamous groups, the clans as such also constituted exogamous units. Thus a totemic organization even when reduced to its simplest terms—exogamous clans with totemic names—would still have to be regarded as a complex, constituted by the coexistence of two psychologically and historically independent features. There would be no "integral phenomenon," no "organic unity".[1]

This brings us to another point, also in part terminological. "How can you know that a clan is totemic," exclaims Mr Lang, "if it is not called by a totemic name?"[2] And again: "I start, then, from the totemic names because, no totemic name, no totemic 'clan'!" Or again, "How can I call a clan 'totemic' (however exogamous it may be) if it has neither totem nor totem names?" (p. 372).

I am unaware of having ever maintained that a clan without a totem could be called "totemic". As to "totemic" names, I believe that the numerous Bantu clans with totems should be called "totemic", although their totems are non-eponymous. The same applies to the Tlingit.[3] On the other hand, would it be wise to apply with Mr Lang the word "totemic" to a clan with naught but a "totemic" name, we should rather say, animal or plant name? To my mind, this use of the term "totemic" would not only be unwise but misleading. If one goes over the list of exogamous *gotras* of a district in India, for instance, he will find that some of these have animal names; others, names derived from a female ancestress; still others, perhaps, archaic names of unknown meaning. Is it justifiable to call the *gotras* with animal names "totemic", while refusing this designation to the other *gotras*?"[4] Such discrimination would, of course, imply that in case of the animal-named *gotras* we were dealing with a peculiar phenomenon requiring a special term. But this natural inference would be erroneous, for an animal name is in itself in no sense more interesting or significant than a local name, or a nick-

[1] When Mr Lang writes: "For the origin of exogamy I look in another direction, believing that local groups of kin were exogamous long before they were totemic," he tacitly endorses the principle above enunciated.

[2] Personal communication.

[3] Mr Lang says I "insist" that the Tlingit clans should not be called "totemic". I have never, to my knowledge, held this opinion. Thus all Mr Lang has to say on this point is directed against a man of straw.

[4] Mr Lang refers to this point when he says: "My answer is written but would occupy too much space." I hope Mr Lang will soon find occasion to let us know his attitude on this question.

name, or any other kind of name.[1] It will thus be seen, I trust, that we may not acquiesce in Mr Lang's use of the term "totemic" without making confusion worse confounded.

The question of totemic names reintroduces the much abused social organization of the Tlingit. In this matter, the difficulties, complexities, and puzzles are largely of Mr Lang's own making.[2] The discussion is needlessly complicated by the introduction of the data as given by Mr Frazer.[3] In the tabulated representation of the Tlingit organization, for instance, given by Mr Frazer "on the authority of Mr F. Boas" and reproduced by Mr Lang, Mr Frazer misunderstands Dr Boas. Dr Boas' list is incomplete,[4] but so far as it goes, corroborates Dr Swanton's conclusion. First he gives the totems [crests] of the Tlingit phratries; then the gentes [clans] of the Stikin tribe are enumerated. Some of the native names are translated as house or local names; it is pointed out that the raven occurs four times as the crest of four gentes [clans] with different native names which therefore cannot mean "raven".

I shall now once more give a very brief outline of the Tlingit organization. The Tlingit are divided into 14 geographical groups. These groups, the Tongas, Sanya, Henya, etc., have nothing to do with the social divisions of the Tlingit but merely comprise "the accidental inhabitants of one locality." The main social division is into phratries: Raven and Wolf (also called Eagle in the northern part of the Tlingit country). A small third division, the Nexa'dî, belongs to the Sanya geographical group. No marriage within the phratry is tolerated. The large majority of marriages are concluded between the two phratries, but both may also intermarry with the Nexa'dî. Descent is maternal. Each of the two phratries comprises a number of clans.[5] These clans,

[1] What instances like the above really suggest, is a study of names and naming. Thus animal names together with local names, nicknames, etc., would constitute one group of facts deserving closer scrutiny. The animal names of clans, on the other hand, would also have to be studied in their relation to animal names given to other units, such as tribes, religious societies, individuals, houses, constellations. The "doctrine of naming" is not, as it was once thought to be, coextensive with totemism, but it constitutes a fascinating, albeit neglected, phase of primitive life and thought. Mr Lang is one of the few students to whom we are indebted for having thrown some light on one side of this vast subject.

[2] Personal communication.

[3] *Totemism and Exogamy*, vol. III, p. 266.

[4] *Reports of the British Association for the Advancement of Science*, 1899, p. 821.

[5] As all members of a clan always belong to one phratry, they cannot intermarry. Thus the clans are not exogamous units. Their exogamy is derivative in the same sense in which the exogamy of the Dieri clans is derivative.

which with some few exceptions have local names, are social divisions. A man is born into the clan of his mother; the clan membership, that is, is quite independent of all considerations of locality. Swanton, who, by the way, holds no "theory of what a Tlingit 'clan' really is", but merely describes what he finds, enumerates 28 clans of the Raven phratry, and 26 clans of the Wolf phratry. Of the Raven clans ("Raven" is not the name of the clans), one occurs in four geographical divisions, one in three, one in two; each of the remaining 25 clans occurs only in one locality. Of the Wolf clans, one occurs in four geographical divisions, two in three, one in two; the remaining 21 clans occur only once. This distribution indicates that the clans are also local groups, which does not mean, of course, that all members of any clan are restricted to one locality; but it does mean that definite localities or groups of houses are associated with individual clans, and that the clansmen are aware of this fact. Here one or two concrete examples may prove useful. Thus the people of the Téqoedî clan (phratry Wolf) occupy four houses in the Tongas geographical division, three in the Sanya, one in the Hutsnuwu, and one in the Yakutat geographical divisions. The Chilkat geographical division, on the other hand, comprises three clans of the Raven phratry: the Łuqā'xadî (one house), GanAxA'dî (six houses), and Nucêκaā'yî (?); and three clans of the Wolf phratry: the Kā'gwAntān (eight houses), Taqêstîna' (two houses), and DaqL!awe'dî (two houses). Mr Lang's conjecture that the Tlingit clans formerly had animal names is not supported by any evidence whatsoever. It is highly probable, on the other hand, that the local segregation of the members of a clan was in former times much more pronounced than is at present the case. Each clan has a tradition in which the origin of the clan is traced to some locality often different from the one now occupied by the clan. If a clan is distributed in several geographical groups the several sections of the clan all have the same tradition as to their common origin in some definite locality.[1] What these old conditions actually were, we can only

[1] That traditions often reflect the state of society in which they arise, Mr Lang admits, but he has often and vigorously denied that "myth making" had anything to do with historic fact. That the contrary may sometimes be true appears from the following instance: On pp. 114 and 115 of his Haida monograph Swanton gives two tables in which the crests of the Raven and of the Eagle families are represented in statistical form. An inspection of the Raven crests reveals the fact that the Raven families fall into two groups. In the first group, the killer-whale and the grizzly-bear crests appear while the rainbow is absent; in the second group, the killer-whale and rainbow appear while the grizzly-bear is absent. When this result is compared with the genealogy representing the legendary history of the Haida families (op. cit., p. 76), all the families of the second group are found to be the descendants of the Lawn-Hill

conjecture, but what they may have been can be gathered from the instances of the Lillooet or the Bellacoola, who were once organized in village communities which subsequently became clans.

A few words are due to Mr Lang's theory of the origin of totemism. Mr Lang refers to my "very brief" and, I may add, thoroughly inadequate, criticism of that theory. It was not my purpose to give, in *Totemism*, an exhaustive critique of totemic origin theories. I there contented myself with making some general remarks about the methodological weakness of all such theories. Opportunity may soon be given us to deal *in extenso* with Mr Lang's own "vision" of totemism; hence I will not do so in these pages. One more point, however, deserves notice. Mr Lang refers to the passage where I suggest "animal taboos, or a belief in descent from an animal, or primitive hunting regulations, or what not" (p. 369), as possible starting points of totemism, on a par, of course, with Mr Lang's animal names of exogamous local groups. He objects to each one of my suggestions (including even "what not") as possible alternatives to his own theory. Taboos "are imposed for many known and some unknown reasons, and not all totem-kins taboo the totem object," while "the belief in descent from an animal is only one out of many post-totemic myths explanatory of totemism," etc. Hence, these features cannot, in Mr Lang's opinion, be conceived as starting points of totemism. If we endorse Mr Lang's assumption of the monogenetic character of totemism, his objections to my alternatives are valid. But Mr Lang realizes that I do not accept this assumption (p. 368). If so much be granted, taboos, belief in descent from animals or plants, hunting regulations, etc., could be regarded as possible starting points. But if we admit the plausibility of other "origins", the methodological error in proclaiming one origin as the true one, no matter how plausible, becomes at once apparent. In anticipation of misapprehension, I must add that all I mean in speaking of some one feature as the origin of totemism is that the particular feature happened to appear first in the development of a given totemic complex. The totality of the historic process was in all cases much more complex than would appear from any of the current totemic origin theories.

branch of the southern branch of the Middle-Town people. Thus legend and objective classification tell the same story. Some of the Eagle families can also be arranged in two groups. The first group is characterized by the appearance of the eagle, beaver, sculpin, and frog crests. In the second group the halibut and cormorant appear in addition, while the frog is absent. And again the results are found to agree with the traditional history of the Eagle families (op. cit., p. 93): group one descends from Labret-Woman, group two from Property-Making-a-Noise.

including Mr Lang's. This explains why I do not attempt to construct a series of causally linked stages of development from any of the suggested "origins", as, for instance, Mr Lang has attempted when using the acceptance of animal names by local groups as his starting point. It will be admitted that at each point in Mr Lang's totemic evolution where something happens, something else might also happen, from either "inner" or "outer" causes. In other words, the assumption that the one definite thing happened, and no other, is always artificial and devoid of historical value, although the assumption may be rendered plausible by finding instances among existing totemic peoples where this one thing actually happens. The greater the number of such assumed happenings, the more artificial and arbitrary is the hypothesis; and with each new assumed happening the probability that the hypothesis represents an *actual* series of occurrences decreases at a tremendous ratio. Mr Lang quite misunderstands me when he assumes that I object to all reconstruction of developments. I should, on the contrary, insist on the necessity of such reconstructions in limited cultural areas.[1] What I do object to is the generalizing of such reconstructions and their application as interpretative principles to other cultural areas, on the assumption that interpretations that applied in one instance would also apply in all other instances. Without specifically commenting on the reconstructions suggested by Mr Lang (p. 379), I fully endorse the principle involved so long as such reconstructions are used as interpretations of the material from which they are derived. I do not wish to imply that our reconstructions will never lead to any generalizations or that missing links in the cultural development of one area could in no case be supplied from a parallel instance observed elsewhere; but I insist that, in the present state of our knowledge, all such procedures require special justification in each individual instance and should not be based on the assumption of a general similarity of developments, totemic or otherwise.

Such was the intended meaning of the "highly abstract" (but why "incorrect"?) passage from my *Totemism* cited and criticized by Mr Lang. An instance given by Mr Lang well illustrates the above principle. It reads: "The processes by which the clan badge got out of the original into the opposite phratry (among the Tlingit) is not that by which Arunta totems are still getting out of the 'right' into the 'wrong' matrimonial class. But the result is the same." Here we have an instance

[1] Cf. my treatment of the processes of cultural diffusion and assimilation among the tribes of the Pacific Northwest (*Journal of American Folk-Lore*, 1910, pp. 281–287).

of convergent evolution,[1] as well as an illustration of how dangerous it may prove to interpret a phenomenon in one cultural complex by means of the results reached in the study of another.

A. A. GOLDENWEISER

COLUMBIA UNIVERSITY
NEW YORK CITY

TRACES OF THE STONE AGE AMONG THE EASTERN AND NORTHERN TRIBES

ONE of the most frequent plaints of the archeologist is that the descendants of our native Indian tribes have no knowledge whatever of the arts and manufactures of the stone age. This is a charge which, while to a great extent correct, is nevertheless not quite so sweepingly true as many believe, and the searcher seldom fails to find some recollections of stone-age industries.

It is constantly asserted by certain students that the historic Indians did not make stone arrow-points, but used bone, antler, or some other substance to the complete exclusion of stone. Archeological and documentary evidence aside, there are numerous definite traditions to the contrary among our Eastern tribes. I shall quote a few that have come to my personal notice.

In 1904 there were several Seneca Iroquois still living on the Cattaraugus reservation in western New York who remembered the process, and one, William Blueskye, had himself made and used stone arrow-points as a boy. He still retained the art, and chipped rather clumsy points from flint pebbles by means of a pebble hammerstone alone, not using a bone flaker. He said that it was difficult to get flint that would chip properly, as most of the stone found on the surface was too dry. Freshly quarried flint was better for the purpose. He claimed that the Seneca formerly boiled the flint for several days, along with medicine herbs, to make it flake more easily.

This latter statement is corroborated by old Menomini, who say that the fat of large animals was boiled with the stone. When Hoffman wrote,[2] he spoke as though the Menomini of his time were still cognizant of the art, but it has now passed into oblivion, except in the instance

[1] I trust Mr Lang is no longer in doubt as to the meaning of the term "convergent evolution". For a somewhat detailed treatment of this topic I should refer him to Dr Lowie's article "On the Principle of Convergence in Ethnology" (*Journal of American Folk-Lore*, Jan.–Mar., 1912).

[2] Hoffman, The Menomini, *14th Ann. Rep. Bur. Amer. Ethnol.*, p. 256.

mentioned. I have collected several ancient stone arrows, picked up and shafted by the Menomini. In each case the head of the shaft was made to swell laterally to take the point, a feature that may be observed in Iroquois models of a similar nature in the collection of the American Museum of Natural History. The Winnebago, Siouan neighbors of the Menomini, claim no knowledge of the manufacture of stone points. It is quite possible that they never made them.[1]

In some localities the Eastern Cree of the Hudson's Bay region used chipped stone points made by percussion. In others they preferred points and blades rubbed from slate, like the flat-rubbed blades found in New England and western New York, and still used among the Eskimo. One interesting feature was the presence in former times of a semilunar scraper of rubbed slate, exactly like the Eskimo woman's knife. Their crooked knives were made of beavers' teeth, and so were little chisels for work on snowshoes.

The Eastern Cree still hold in memory the days when they used grooved stone axes. The blade was set in a handle, split at one end to fit the groove, and the haft was then bound above and below the split with deerskin. Fire was not used by the Cree as an aid to chopping. Stone celts were fastened in wooden handles, the haft being at right angles to the blade as in an adze. These were used to chisel ice. The Cree of Moose Factory say that some axes, used especially to cut firewood, were made of moose, deer, or caribou shoulder blades, or beaver rump bones.

The Saulteaux Ojibwa used stone celts, hafted like Cree grooved axes. They were considered hard to make, and were very scarce, usually only one being in the possession of a single family.

Stone celts are well remembered by the Seneca, who have told me how they were hafted in a pierced handle, and used, with fire, held in check by clay swabs, as the active agent, in cutting down trees and in other wood work. The stone tool was used to hack away the charcoal. Mr M. R. Harrington has described a hafted stone celt collected from the Cayuga.[2]

The writer recently purchased a round, flat, water-worn pebble from a Menomini woman, who claimed that it was formerly used to polish and sharpen bone awls. It is the counterpart of other rubbing stones I have found on prehistoric sites in New York, New Jersey, and Massachusetts. Bone awls are out of date, but I have collected several metal awls hafted

[1] Radin, Some Aspects of Winnebago Archeology, *American Anthropologist*, 1911, vol. 13, no. 4, p. 536.

[2] *American Anthropologist*, 1909, vol. XI, no. 1, p. 86.

in elaborate carved bone or antler grips, from both Menomini and Winnebago.

One point in a recent controversy between two well-known writers on anthropology hinged on whether or not bone celt-like objects are used by the Minnesota Ojibwa. Just north of Minnesota, in Canada, I have collected bone beaming-tools made from the shin-bones of moose, caribou, and deer, and used in removing the hair from deerskin; and toothed and plain fleshers and scrapers, some of the plain fleshers having celt-like blades. Among the Eastern Cree all these types are found, and, in addition, a small celt-like bone implement used as a wedge to push back the hide is employed in skinning deer. Possibly there is some truth in the oft-repeated tradition which calls the stone celt a "skinning knife"; very thin celts certainly could be so used. The Cree toward Labrador formerly used stone and bone celts fastened perpendicularly to long wooden handles to chisel ice.

In addition there are still in use among the Winnebago and Menomini long, thin bone needles with a central perforation, made from the ribs of some large animals such as the buffalo, and designed for sewing together reeds to make wigwam mats, while smaller needles for weaving snowshoe webs are found among the Menomini, Ojibwa, and Eastern Cree. I have also obtained a bone hook and a hollow bone needle-case from the latter. Beads made from hollow bird-bones, cut in sections, exactly like those found on prehistoric Eastern sites, may still be seen among Winnebago and Menomini, and from the Ojibwa of Sac Seul I have collected one small needle, made of the perforated penis bone of the martin and used in sewing garments.

Charlie Sabattis, the well-known half Abenaki Adirondack guide, once showed me the spot where his father had shot his first moose with a bone-headed arrow. Both Sabattis and Blueskye, the Seneca, assured me that antler arrow-points were easily made by boiling the prongs until they were soft enough to cut "like cheese." Later, when at work with Mr M. R. Harrington in excavating a very early historic Erie village and burial site[1] at Ripley, Chautauqua county, New York, we found numerous points of antler, discarded cores, and long curling shavings of the same material, which must have been removed from the prongs with a stone knife or scraper, and this was only possible if the antler was in a "cheesy" state.

[1] The work on this site was afterward completed for the New York State Museum by Mr A. C. Parker, and furnished the material for his bulletin entitled "An Erie Indian Village and Burial Site," *Bulletin 117, N. Y. State Museum*.

Mr M. R. Harrington has collected several stone gorgets of both the simple and double-holed type among the Canadian Iroquois and Delawares. The single-holed form was used generally as a pendant by Iroquois owners; the double-holed variety served as a hair ornament among the Delawares.

Stone pipes are still used, to my personal knowledge, by the Eastern Cree, Ojibwa, Winnebago, Menomini, and Tuscarora. Doubtless, however, the modern method of manufacturing these things is different from that practised long ago.

Pottery is no longer made by the Iroquois, and was never used by the Eastern Cree, who preferred stone vessels pecked into shape. The Seminole of Florida still remember when earthenware was used, and doubtless the old people know how to make it. Ojibwa from Cat Lake, north of Sac Seul, Canada, told me that they very recently made stone vessels and earthenware, for which they employed the coil process.[1] My Menomini notes tell a different story.

"Pottery vessels are said not to have been made or used for over one hundred years, yet the memory of the process still lingers. They were made from selected clay which was pounded and mixed with pulverized shells for tempering. When the clay was properly compounded, more water was added, and it was kneaded into a stiff paste which was plastered by the hands over a large ball of basswood bark twine, leaving one end uncovered. The clay was next smoothed off with a stick and the incipient vessel was set in the sun to dry. In fact, sunshine was considered such a necessary factor in the drying process that no one ever made pottery on a dull day.

"When the clay coating was dry, the potter took hold of the end of the ball of twine which protruded from the opening left for that purpose, and, pulling it, unwound the ball within and left the earthen shell. Fresh clay was then daubed over the rough inside and the vessel was scraped smooth with a stick, outside and in. The kettle was next sized with a coating of finer clay, and ornamented with incised designs made by a sharpened stick. Holes were then bored near the rim to receive a bail of basswood bark. The vessel was dried again, and it was then ready for use without further treatment. It was not fired, but became baked by the flames when in use.

"It is said that bowls and spoons were made of clay before wood came into use. The first iron and brass kettles of commerce are thought to have been thrown up on earth to sacred dreamers by the Underneath Powers; probably this is a survival of a tradition in vogue when pots were made of earth, the property of the Gods Below."

If I had chosen to quote from others, a mass of evidence might have

[1] Alanson Skinner, Notes on the Eastern Cree and Northern Saulteaux, *Anthropological Papers of the American Museum of Natural History*, vol. IX, part 1, p. 130.

been brought out that would have prolonged and extended this list far in excess of its present length, but I have given only some of the examples that have come to my personal knowledge in the course of a relatively brief experience. One fact that most archeologists do not seem to realize sufficiently is that stone was not the only material worked by the aborigines of the "stone age". Take, for example, the bowl carved from a knot, the woven bast or hemp bag, the specimen of porcupine quillwork—each is also a survival of the "stone age". As a matter of fact, the use of stone was comparatively limited. Edged tools, hammers, ornaments, and some weapons were the principal articles made of this material, whereas the bulk of the property in the hands of the savage was constructed of wood, clay, skin, or fabric.

ALANSON SKINNER

HARVARD UNIVERSITY
CAMBRIDGE, MASS.

EDUCATIONAL THEORIES

EDUCATIONAL theories are beginning to assert a claim upon Anthropology—with what legitimacy the future must decide. Almost a decade ago one of our leading pedagogues, Dr G. Stanley Hall, of Clark University, in his *Adolescence* pointed out the need of a special study of the education of the children of lower peoples. Dr Frank Spencer, in his *Education of the Pueblo Child*, has attempted such a study as President Hall advocates. Until the present, however, no educational treatise, so far as we are aware, has incorporated the educational régime of primitive peoples as part of its organic scheme. This is now attempted by Dr Irving King, Assistant Professor of Education in the State University of Iowa. Chapter II of his *Social Aspects of Education* (Macmillan Co., New York, 1912), treats, under the title of "The Social Origin of Educative Agencies," of " the education of the Pueblo child," and " the social nature of education as seen in primitive life," containing, at the end, a list of "references on primitive types of education." "From the point of view of moral character alone," he writes, " it is doubtful whether the educational activities of the higher races are as efficacious as those of savages." So far as social morality, interpreted as conformance with the prevailing ethical code, is concerned — the ideal in most systems of education — it seems *not* doubtful that the educational activities of the higher races are less efficacious than those of savages. Why have field-workers not interested themselves in this phase of savage life — seeing that it is one of the most important from the point of view of the

native himself who must somehow "secure the solidarity of the group" if it is to "maintain its *status quo*"? As the writer says: "In primitive society, especially, it would be impossible for a tribe to survive long if the education afforded its children were widely divergent from the needs of the life process. In some way they must learn to use the implements of the hunt and of warfare. They must learn those lessons of tribal custom and religion which will insure the stability and solidarity of the group. If the simple arts of a barbaric society were not in some way preserved in each new generation, that society would soon drop back to the level of brute life. Some form of education, then, however crude and haphazard, either conscious or unconscious, is necessary even for unprogressive peoples, that at least the existing level of culture may be retained."

"If there is any heresy that the dear Lord will pardon," writes Dr G. Stanley Hall, "it is that of interpreting theology as anthropology." To "theology" he might have added "education", since all of his educational and psychological studies alike profess a wide anthropological basis. In his recent work on *Educational Problems* (1911) he is equally ardent in his claims of what Anthropology can do. "A little anthropology should have place in a real people's college," i. e., in the High Schools (II, 662).

In this monumental work on the broader and basic problems of education President Hall is forever reiterating the doctrine preached again and again in his *Adolescence*: viz., that the child recapitulates in its individual history the history of the race. To quote a page of *Educational Problems* (I, 602):

"It should be premised and never forgotten that from the standpoint of industrial education the recorded history of the race has not yet been utilized aright. Dewey's efforts in Chicago years ago to lead young children over the pathway of the history of labor were exceedingly ingenious and suggestive, even if there was only a limited adaptation of phyletic to ontogenetic. Paleolithic and Troglodyte periods hardly correspond to the stone-cutting or masonry of today. The so-called Bronze Age, so far as we know, is not very much represented in childhood. Possibly clay modeling and the elements of pottery belong rather early. It may be that the molding and hammering of lead and whittling belong here; and significant too are the lessons drawn from the first zests of children in joints, edges, strings, clubs, and things to strike with. The Nomad Age is better represented in truancy and runaways, and suggests excursions. The Hunting Age correlates with the sling, crossbow, and fishing passion. No boy ever invented a boomerang. Domes-

tication is represented by pets, and perhaps by the horse school of California; it may be by keeping bees, pigeons, dogs, etc. In weaving, skin dressing and cloth making, as well as shelter, we doubtless have atavistic motivations from the tepee up. Play in general is the rehearsal in the midst of our own life of very ancient paleopsychic activities which belong earlier in the race. Thus, on the whole, I believe the very best possible practical field for the recapitulation theory is just at this stage, and that, therefore, we should find powers at our disposal, could we learn how to turn them on, that would enable us to develop before and perhaps a little into the teens the very best liberal and humanistic basis for later special training that industrial education can ever possibly expect to have." President Hall does not court anthropology half-heartedly!

As Tylor wrote a half century ago, it often happens that the highest intellectual effort of one period in our history comes down to be the child's play of a later time. Dr Hall would make the intellectual achievement of every earlier stage the preliminary training of every child.

Just what the experience of the race has been it might be difficult to say; and perhaps it would not be so easily discovered as the author implies. It would seem, for example, that the Negro boy would have to undergo a different training from his neighbors, to the north and east, simply because his ancestors of the race—*horribile dictu*—had (apparently) gone from the Stone age into the Iron and deprived succeeding generations of the benefit of a training in an omitted Bronze age of transition! This seems to be confusing the fact that the children must suffer for the sins of their racial ancestors to the fourth and fifth millenia with the justice of such an infliction. Indeed, it seems no different from training the criminal in keeping with the life of his criminal ancestors, near or remote, and the sensible after the manner of life of their senseless forefathers. Why start at Paleolithic and Troglodyte rather than "simian and probably arboreal"? (A theory should at least be consistent with itself.)

To take for granted and as not demanding proof the implied dogma that what somebody else, who happened to be our ancestor, did and thought, should be incorporated in our own training, is to ask us to accept History as the equivalent of Ethics. Indeed, as was pointed out shortly after the appearance of Hall's *Adolescence*, "the recapitulation theory, that each child in his growth passes in his mental and spiritual life through the successive stages of barbarism and civilization by which the race rose to its present position, however true it may be and useful in correlation of phenomena, is liable to lead, and . . . has already led to dangerous educational practices" (cf. *The Independent*, Nov., 1904).

It is difficult to see how ethnological data can furnish more than descriptive material. It does not give ideals—much less so since no individuals of different times and societies find themselves in exactly analogous circumstances—and without ideals, that is to say *desiderata* of some kind, education as signifying more than a record of influences, is meaningless.

Moreover, the analogy on which President Hall bases his pedagogic doctrine seems to us largely at fault. Savages are not children of nature, being quite as old as ourselves; nor are they analogous to the children of civilized people if only because the former live in an environment of their own making and active participation, whereas the latter live largely in an environment created and maintained by their elders and into which they are but slowly admitted. There may be even more serious cause of complaint with the pedagogical authority because of his constant tendency to take factual correspondences as *ipso facto* proof of historical connection. To be equally dogmatic and assertive, we may say that if boys congregate in predatory gangs, this by no means proves the predatory spirit to be a reverberation of some ancestral experience of the race. Surely at some point in evolution new characteristics have come in. Perhaps, too, more should be introduced. The goal may be away from rather than back to the ancestral stage. The converse must be established, not merely asserted. With this attempt must come a critical evaluation, and thus we shall be lifted, as educational theories should lift us, out of the what-is-and-has-been to the what-should-be.[1]

W. D. WALLIS

UNIVERSITY OF PENNSYLVANIA
PHILADELPHIA

AMERICAN AND ENGLISH METHODS IN ETHNOLOGY

MR WALLIS' contribution to the "Discussion and Correspondence" pages (*American Anthropologist*, 1912, vol. 14, pp. 178–186) clearly establishes the point that Dr Rivers is not alone among his compatriots in repudiating the doctrine of unilinear evolution. The assumption that he stands by himself was based entirely on Dr Rivers' own statement as to the trend of thought among English anthropologists. It was hardly unnatural for an American reader to accept as authentic what the President of the Anthropological Section of the British Association had to say on that subject. Oddly enough, neither Mr Wallis nor his unnamed

[1] Mention may be made of the section on *Primitive Art*, in vol. II, pp. 528–535, of Hall's *Educational Problems*.

correspondent takes Dr Rivers to task, but both swoop down with the charge of exaggeration and jingoism upon his guileless American reader. A reference to Dr Rivers' address, to which my letter was a rejoinder, must at once dispel this accusation. It was Dr Rivers who characterized the ethnological methods in vogue in different countries, and the whole point of my reply was that so far as America was concerned his characterization was incorrect. This is not denied by Mr Wallis. As for English anthropologists, I merely quoted verbatim Dr Rivers' statement that they had been "inspired primarily by the idea of evolution founded on a psychology common to mankind as a whole." Perhaps Dr Rivers will wince at Mr Wallis' revelations, but I cannot help remaining pachydermatously unmoved under the charge of parochialism and chauvinism when all I have done is to take a British expression of opinion about British ethnology at its face value.

ROBERT H. LOWIE

AMERICAN MUSEUM OF NATURAL HISTORY
NEW YORK CITY

INTERNATIONAL CONGRESS OF AMERICANISTS

THE eighteenth International Congress of Americanists was held at the Imperial Institute, London, from May 27 to June 4, 1912, Sir Clements R. Markham presiding. Delegates were present from thirty-one governments and fifty-seven institutions. Those representing the United States Government were: Dr Aleš Hrdlička, Miss Alice C. Fletcher, Prof. George Grant MacCurdy, Dr E. L. Hewett, Prof. George B. Gordon, Rev. C. W. Currier, Prof. Marshall H. Saville, and Dr Charles Peabody.

American Institutions were represented as follows: Columbia University, New York, Franz Boas; University of Pennsylvania, Eckley B. Coxe and George B. Gordon; Yale University, George Grant MacCurdy; Stanford University, V. L. Kellogg; Catholic University of America, C. W. Currier; American Ethnological Society, Franz Boas; Smithsonian Institution, Aleš Hrdlička; Anthropological Society of Washington, A. Hrdlička and Alice C. Fletcher; Academy of Natural Sciences, Philadelphia, Sir Thomas Lauder Brunton; Academy of Sciences, Davenport, Iowa, C. A. Ficke; American Philosophical Society, Franz Boas; Peabody Museum of Harvard University, C. Peabody, Alice C. Fletcher, and Zelia Nuttall; Brooklyn Institute of Arts and Sciences, Stansbury Hagar.

At the opening session addresses were made by the President, Sir Clements R. Markham, Sir William Osler, representing the Board of

Education, Alfred P. Maudslay (now Sir), Dr S. A. Lafone Quevedo, and Dr F. Heger.

The social and other functions connected with the Congress included a series of dinners given by Sir Clements R. Markham and Lady Markham at their home, a reception at the South Kensington Museum and a dinner at the Trocadero Restaurant, both given by the President and local committee of the Congress; a reception by Sir Richard Martin and Lady Martin; an "American Dinner" at the Lyceum Club (to meet the American Consul General, the Duchess of Marlborough, and others); and a reception by the American Ambassador and Mrs Whitelaw Reid at Dorchester House. Members of the Congress were also made temporary Honorary Members of the Royal Societies Club and the British Empire Club for the period of one month. An afternoon was devoted to the British Museum collections from the Americas, the guests being received by the Duke of Northumberland, Dr Charles H. Read (now Sir), and Dr T. A. Joyce. The principal excursions included visits to Cambridge and Oxford.

The Congress was noted for the large attendance and the unusually long program. The following papers were read:

Dr Charles Peabody: Archeological Importance of the Recent Work of T. Volk in the Gravels at Trenton, New Jersey.

Dr J. B. Ambrosetti: A Fossil Skull from Argentina.

Prof. L. Capitan: Le paléolithique en Amérique; état de la question.

Miss A. Breton: An Implement of Paleolithic Type from Ancon, Coast of Peru.

Dr A. Hrdlička: Report on Ancient Man in South America.

Dr A. Hrdlička: The Ethnic Nature and Probable Origin of the American Aborigines.

Dr J. C. Tello: Trephining in Peru.

Waldemar Jochelson: The Aleut Language and its Relation to the Eskimo Dialects.

Dr W. Thalbitzer: The Four Skraeling Words (from Newfoundland), in Erik the Red's Saga.

Prof. Franz Boas: Notes on the Morphology and Phonetics of the Mexican Language.

W. H. Mechling: A Linguistic Map of the State of Oaxaca (Mexico), Based on Vocabularies Collected by Dr A. Peñafiel.

Dr K. Theodor Preuss: Das Verbum in der Sprache der Cora Indianer.

S. G. Morley: The Hotun, a Maya Chronological Unit.

Jonkheer L. C. van Panhuys: Observation on Numerals in a Carib Language.

Prof. J. F. Oliveira: The Cherentes—Indians of Central Brzail; Notes and Vocabulary.

Dr S. A. Lafone Quevedo: (*a*) Pronominal Classification of Certain South American Indians. (*b*) A Short Account of the Sanchez Labrador MSS. on the Ubayá Tongue.

A. Posnansky: El signo escalonado en las ideografias Americanas con especial referencia à Tihuanacu.

A. Posnansky: Esquema preliminar para la decifracion de las ideografias de la Puerta monolitica à Tihuanacu.

Dr Max Uhle: Mound Settlements at Ancon.

Prof. Marshall H. Saville: Archeological Researches in the Andean Highlands of Ecuador.

J. Jijon y Caamaño: Pueblos prehistóricos de Imbabura. Alfareria prehistórica du Guano.

Dr K. T. Stoepel: Report on the Berlin Expedition to Colombia and Ecuador.

Dr K. T. Stoepel: The Ancient Monuments of San Agustin, and Archeological Researches in the District of the Upper Magdalena River.

Jonkheer L. C. van Panhuys: Recent Discoveries in Dutch Guiana.

Jonkheer L. C. van Panhuys: Development of Ornament, etc.

Professor Dr Karl Sapper: Das tägliches Leben der Ketchi-Indianer, Guatemala.

Dr S. A. Lafone Quevedo: Identification of the Chanca Peruvian Indians.

Alphonse Gagnon: Les sauvages du Canada.

Dr Leo Sternberg: Lewis H. Morgan's Touranian-Sanovian System and the Nations of Northeastern Asia. (Homage to the 40th anniversary of the great Americanist's work, "Systems of Consanguinity and Affinity of the Human Family.")

Waldemar Jochelson: Scientific Results of the Ethnological Section of the Riabouschinsky Expedition of the Imperial Russian Geographical Society.

F. C. Mayntzhusen: Gebrauche bei der Geburt und die Namengebung der Guayaki.

E. Roquette: Die Nhambiquaras Indianer in Zentral Brazilien. (Ethnographic results of the Rondon Commission.)

Alberto V. Frič: Männer Bunde der Chamacoco, Brazil.

Capitão Henrique Silva: A tribu Goia ou Goiazes.

Prof. M. Gonzalez de la Rosa: The Toscanelli Question and other Solutions of the Columbus Problems.

Baron de Borchgrave: La Flandre et le Greenland au IXe siècle.

Dr R. Pietschmann: Chronik des Huaman Poma.

Dr B. Glanvill Corney: The Rule of Don Manuel Amat, Viceroy of Peru, 1767–1776.

Mrs Zelia Nuttall: Note on the Missing Text of the Magliabecchi MS., and on Certain Unedited MSS. Relating to the History of Mexico.

Dr A. M. Tozzer: A Spanish MS. in the Archives of the Indies at Seville on the Maya-Lacandones.

Dr C. Warren Currier: A Sketch of a Few Sources for the Ecclesiastical History of Spanish America in the Early Colonial Period.

Reg. Rat. Dr F. Heger: Neue Oelbilder sur Veranschaulichung der Rassenmischunger in Mexico.

Dr J. T. Medina: Fray Diego de Landa, Inquisidor de los Indios de Yucatan.

M. de Oliveira-Lima: The Protection of Brazilian Aborigines.

D. J. Gutierrez Ponce: The National Academy of History, of Colombia.

R. B. Orr: Pre-Columbian Copper in America.

Prof. Geo. Grant MacCurdy: Shell Gorgets from Missouri.

Dr K. T. Preuss: Vorlage seines Werkes "die Religion der Cora Indien," texten nebst Vortrág: die magische Denkweise der Cora.

Dr Franz Boas: Report on the Work of the International School of American Archæology and Ethnology in Mexico.

Alden W. Mason: Notes on the Tepeuanos.

Señora Isabel Ramirez Castañeda: El Folklore de Milpa Alta, Valle de Mexico.

Manuel Gamio: La arquéologia de Atzcapotzalco, Mexico.

A. P. Maudslay: The Great Teocalli of Tenochtitlan, Mexico.

Dr Capitan: Les amulettes de Teotihuacan.

Mrs Barnett: Quelques observations sur les petites têtes en terre-cuite de Teotihuacan.

Dr Seler: Uber die Fresken von Teotihuacan und verwante Darstellungen auf Thongefassen.

Frau Cecilie Seler: Painted Potsherds from Cuicatlan and Teotitlan del Camino, Mexico.

Stansbury Hagar: The "Houses of Rain and Drought" in Codex Vaticanus 3773.

Hermann Beyer: Uber den Affen in den Mexikanischen- und Maya-Codices.

Dr Walter Lehmann: Some Central American Calendar Problems.

Dr G. B. Gordon: An Unpublished Inscription from Quirigua.

Dr Capitan: Quelques caracteristiques de l'architecture Maya.

Comte M. de Périgny: Le plein cintre dans l'Architecture Maya.

Dr Seler: De Ruinen von Uxmal in Yucatan.

Dr E. L. Hewett: The Excavations of the School of American Archæology at Quirigua, Guatemala.

J. Cooper Clark: The Story of "Eight Deer" in Codex Colombino.

J. Martinez Hernandez: A Maya Account of the Creation of the World. An Unpublished Document from the Book of Chilam Balam, of Chumayel.

Dr Alfonso Pruneda: The Mexican Laws Respecting Archeological Monuments.

Dr A. C. Simoens da Silva: Points of Contact of the Prehistoric Civilizations of Brazil and Argentina, with those of the Pacific Coast Countries.

Dr Nelson Coelho de Senna: Ethnographia e Archeologia indigena do Brazil.

J. C. Gomez Ribeira: Anthropomorphic Idol of Iguape, S. Paulo.

Salvador Debenedetti: Influencias de la cultura de Tiahuanaco en la region del Noroeste Argentina.

Dr Alejandro Gancedo: Hallazgo arqueologico.

Herr Regierungsrat Dr F. Heger: Die Diaguites, oder Calchaqui Kultur, Argentina.

Dr Ricardo Palma: Huacos antropomorfos mutilados del Peru.

Dr Lizardo Velez Lopez: Las Mutilaciones en los vasos Antropomorfos del Antiguo, Peru.

The nineteenth International Congress of Americanists will be held in 1914 and will consist of two sessions, the first at Washington, D. C. and the second at La Paz, Bolivia.

GEORGE GRANT MACCURDY

ORIGIN OF CERTAIN EARTH CIRCLES

In an article by Mrs N. D. White, entitled "Captivity among the Sioux, August 18 to September 26, 1862," printed in vol. IX of the *Collections of the Minnesota Historical Society*, the following statement appears (page 419):

> We could distinctly hear the report of muskets during this battle. We were now in the greatest danger of all our captivity; for, with defeat of the Indians, they were likely to return and slay all the white captives and perhaps some of the half-breeds. The latter appeared to be somewhat alarmed, and consequently we were all put to work by "Black Robinson," throwing up breastworks. I was not a soldier, but soldiers never worked with better will than I did to get those fortifications completed. I used a shovel; my squaw mother used an old tin pan. The remains of those breastworks are still visible, I am told. . . . We were also made to construct breastworks inside the tipi. We sank a hole in the ground about eight feet in diameter and two feet deep, and placed the earth around the pit, thereby increasing the depth to about four feet. In this den eleven of us spent three nights. While the battle was raging, the squaws went out with one-horse wagons to take ammunition to the warriors and to bring in the dead Indians.

This evidently explains the origin of some of the small circular earthworks and depressions met with in Minnesota and the Dakotas.

Referring to a point about ten miles south of Bismarck, N. Dak., Mr G. F. Will states (*American Anthropologist*, 1910, vol. XII, p. 58):

> On the top of one of these hills . . . are thirty or forty depressions, six to ten feet across, and with an average depth of about one foot. Excavation here revealed only a very few bone chips and a few signs of burned earth at a depth of six to twelve inches.

These depressions may readily be attributed to excavations made inside of tipis, similar to the one described by Mrs White as having been made just fifty years ago. Assuming the examination to have been made within the depression, although the account is rather ambiguous, the "few signs of burned earth" discovered may well have resulted from fires kindled after the construction of the embankment within the tipi, and earth and mold to a depth "of six to twelve inches" would undoubtedly have accumulated in the depression after the abandonment of the tipi. The group of thirty or forty depressions mentioned by Mr Will probably marks the site of a village composed of that number of tipis, which at some time were fortified within against attack by an enemy.

DAVID I. BUSHNELL, JR

UNIVERSITY, VA.

ORIGIN OF THE WORD LAGETTO

I recently read a statement made by an English philologist (and am under the impression that I have seen the same statement in some dictionary) that the word *lagetto* (changed by the botanist Jussieu to *Lagetta* to form a genus-name), a popular appellation in Jamaica for the tree which affords the well-known "lace-bark," is an Indian (Arawak) term. It seems strange that some one should not, long ere this, have detected the origin of this word, which is merely a Spanish-Negro corruption (by metathesis of the letters *t* and *g*) of *latigo*, a Spanish name (of unknown etymology) for a horse-whip. The inner bark of the lagetta-tree consists of numerous concentric fibers that interlace in all directions, and, when macerated in water and stretched out laterally, assumes the appearance of coarse lace. It is recorded that Charles II received as a present from the governor of Jamaica a cravat, frill, and pair of ruffles made from this material, which (*aiunt*) is employed even now for the fabrication of bonnets, collars, and other minor articles of feminine apparel. Formerly, however, it was twisted and knotted and used for making whips with which, in the time of slavery on the island, the backs of the negroes were lashed by their task-masters. Hence the negro metaphorical application of the name of the whip to the tree that furnished the material for making it. Von Tschudi, in his *Travels in Peru*, remarks that the corruption of Spanish words by the metathesis of the letters that compose them was a common phenomenon in the speech of negro slaves. A figure of a lace-bark latigo, consisting of handle and lash in one piece, was given a few years ago in the French scientific journal *La Nature*.

W. R. GERARD

1046 TELLER AVE., NEW YORK CITY.

ANTHROPOLOGIC MISCELLANEA

The Peruvian Expedition of 1912, organized under the auspices of Yale University and the National Geographic Society for the purpose of carrying on geographic and anthropologic exploration in Peru, under the directorship of Prof. Hiram Bingham, will endeavor to continue and extend the work of the Yale Peruvian Expedition of 1911, utilizing the discoveries made then and continuing further along the same lines. It is the purpose to pursue intensive studies in the region where reconnoissance work was done on the last expedition, taking advantage of the discoveries then made to guide the plans for this year.

The work planned for the expedition includes (1) the preparation of large-scale maps showing, among other details, ancient and modern sites and the routes connecting the later Inca capital of Vitcos with the rest of Peru; (2) The discovery and identification of the places mentioned in the Spanish chronicles and in the early accounts of Peru, particularly the places connected with the 35 years of Inca rule after the advent of Pizarro; (3) The study of the various diseases throughout the region visited and their geographical extent; (4) The study of the effect of coca chewing; (5) The study of the bone deposits in the Ayahuaycco Quebrada where human and other bones were found on the 1911 expedition; (6) The collection of osteological material not only in the Cuzco gravels but also in the mountains of Vilcabamba; (7) The making of photographs and physical measurements of native types throughout the region visited, with particular reference to a study of the distribution of the more important groups; (8) The collection of material for a study of the distribution of types of cranial deformation; (9) A thorough investigation of the region round about and north from Cuzco and Pisac, photographing, measuring, and describing whatever architectural material presents itself; (10) The continuation of the investigation of the ruins discovered on the expedition of 1911; (11) The penetration still farther into the jungles of the Pampaconas valley and beyond, to see whether any more remains of Inca occupancy can be found.

Prepared Human Head.—Some years ago, Lieut. W. E. Safford, U. S. N., brought to the National Museum a large collection of ethnological material which he obtained among the Jivaro Indians of the northern forest region of Peru. Among these was a human head which

FIG. 49.—Head dried by Jivaro Indians, northern Peru. Collected by William E. Safford.

was worn about the necks of chiefs on ceremonial occasions as a sign of bravery and prowess in warfare, corresponding to the scalps of the North American Indian. An account of this human head was given Lieut. Safford by Mr Tirado, who was an eye-witness of the process. The description is as follows:

"The head of the victim is cut off squarely, with a small portion of the neck attached to it, and the scalp is laid open by a longitudinal slit down its back to the base of the neck so that the skull may be removed. The skin is then peeled off, a portion of flesh remaining attached to it, leaving the skull bare, a knife being used about the eyelids, ears, and lips, so as to leave them attached to the head and face. When the skull and the jaw-bone are removed, the sack-like envelope has the slit in its back sewn up, and the head resembles somewhat that of a mammal in process of preparation by the taxidermist. A small hole is made in the center of the scalp, and a loop of cord or sennit is passed

through and toggled or knotted. This loop is long enough to pass around the neck of the future wearer. The head is then dipped into a hot infusion of certain herbs (probably of an astringent nature), care being taken not to allow the roots of the hair to enter. Hot stones are then introduced into the cavity for the purpose of drying it, the stones being replaced as they cool off. Sometimes a whole day is spent in this operation. When the head is sufficiently dry it is hung up in the smoke of the daily fire used for cooking, the hair being wrapped up in leaves to protect it from the smoke. During the entire process it continually decreases in size. After three or four months it is sufficiently cured. It is then taken down, and the lips are pierced with holes through which loops are passed for attaching a skein-like mass of string. On this skein are stained spots or bars to indicate how many victims the wearer of the trophy has slain; and the jet-black face is ornamented with a number of red stripes, the pigment used being obtained from the 'achote' or arnotto of commerce (*Bixa orellana*)."

WALTER HOUGH

Anthropological Work by the Geological Survey of Canada.—Mr C. M. Barbeau's Wyandot ethnological field work in Oklahoma of September–December, 1911, met with gratifying results, particularly as regards mythology, rituals, social organization, and music; Mr Barbeau left for Oklahoma in April, 1912, to resume his Wyandot researches. Dr. A. A. Goldenweiser continued work on Iroquois social organization and religion at Six Nations Reserve on Grand River, Ontario, from December, 1911, to February, 1912, and is going forward with his researches in the summer of 1912. Mr F. W. Waugh, of Toronto, has been intrusted with the study in the field of Iroquois material culture, and spent some time on this work at Six Nations Reserve in the winter of 1911–12; this branch of Iroquois ethnology is being continued by Mr Waugh in the spring and summer of 1912. The ethnological study of the Ojibwa has been intrusted to Dr Paul Radin; the first Ojibwa reservation visited was at Sarnia, near Lake Huron, where a large body of text material has been obtained. Museum work in Canadian archeology has been continued by Mr Harlan I. Smith with the assistance of Mr W. J. Wintemberg, of Toronto; Mr Smith and Mr Wintemberg will make an intensive study of a selected site in the St Lawrence lowlands in the spring and summer of 1912. A new departure in the anthropological work of the Survey has been undertaken by Mr Francis H. S. Knowles, Assistant in Physical Anthropology at Oxford University. The physical anthropology of the

Indians of eastern Canada has been neglected on the whole, so that it seemed advisable to begin this branch of anthropological work with an eastern tribe. The Iroquois have been selected for the purpose and Mr Knowles has undertaken the task of securing anthropometric data at Six Nations Reserve in the spring and summer of 1912.

International Congress of Anthropological Sciences.—At an International Conference called by the Royal Anthropological Institute of Great Britain and Ireland and held June 4th in the rooms of the Institute, London, immediately following the sessions of the International Congress of Americanists, it was voted to organize an international congress of the anthropological sciences, which shall either include several existing congresses or work in affiliation with them. The congresses which it is hoped may become a part of the projected congress are: Congrès International d'Anthropologie et d'Archéologie Préhistoriques, International Congress of Anthropology, Congrès Internationaux d'Ethnographie, International Folk-Lore Congresses, and International Congress of Americanists.

The organizing committee appointed by Dr A. P. Maudslay, president of the Conference, is constituted as follows: Maudslay (ex officio), chairman; R. R. Marett (of Oxford), secretary; Hrdlička, Boas, Capitan, Krämer, Heger, Waxweiler, Duckworth, Lafone Quevedo, and van Panhuys. This committee met at the close of the Conference and decided that a congress should not be held before 1915 (if then). In the meantime a general committee is being constituted by gradually adding names to the organizing committee; and subcommittees are being formed to establish harmonious relations with the various existing international congresses.

GEORGE GRANT MACCURDY

Death of Henry Jones.—Henry Clay Jones, father of the late Dr William Jones, died February 20, 1912. He was the son of George W. Jones, a white man, and Katiqua (*keti'kwäw^a*, or, in the native syllabary, *ke ti ge wa*—Eagle Woman), a full-blood Fox woman. Henry Jones was widely known as the best and most reliable interpreter of his people, and more than once represented them at Washington. Though a Fox half-blood, Henry Jones in 1869 went with the Sauk from Kansas to Oklahoma, where he became a member of the council and was known as the most progressive member. Henry Jones accompanied his son William to Tama, Iowa, where the Foxes proper (the term "Sac and Fox" has more of a legal than an ethnological meaning) live, to enable

the latter to gather the material for the well-known "Fox Texts." It was largely for his father's sake, Dr Jones wrote, that the information was furnished him. A fact not generally known is that Henry Jones was primarily the translator of William's "Fox Texts," though the latter revised the translation. Last summer the writer had occasion to hear Henry Jones interpreting, and considered his ability in that line as altogether exceptional. For some years his health had been failing; he died of Bright's disease in his sixty-eighth year and was buried with Masonic rites after the services at his home.

TRUMAN MICHELSON

Eric Boman, well-known for his researches in the Andean region of Argentina, etc., left Stockholm on January 10, 1912, on a new expedition to South America, under the auspices of the Swedish Anthropological and Geographical Society, which furnishes a subsidy for this investigation. The expedition will last about a year. In a letter to Dr Alexander F. Chamberlain, dated Rio de Janeiro, February 10, Dr Boman outlines the objects of the expedition as follows: First, to continue the archeological investigations south of the Province of Catamarca, with a view of discovering whether the pre-Hispanic remains there are sufficiently similar to those of the northern Andine provinces as to be referred to the same Diaguitan culture; and to seek in the region of the Lagunas de Huanacache for traces of the old Huarpes. Second, to carry on investigations in Chile, from Santiago to Copiapo. In this region there may be found numerous remains representing the period of Inca domination; perhaps also some traces of the Diaguitas, and probably likewise some autochthonous substrata. Besides his archeological researches, Dr Boman's plans include the collection of folklore and the obtaining of anthropometrical measurements of pure Indians. His address during the whole expedition will be Jakobsgatan 4, Stockholm (Sweden), whence all mail will be forwarded to him in South America.

Mr Clarence B. Moore has returned after five months spent in investigating aboriginal mounds of Red river, in Louisiana, Arkansas, and Texas. Among many other objects were obtained three pipes of great interest, two of which came from a mound in southwestern Arkansas. One of these, of earthenware, the stem and bowl being in one piece, is twenty-two inches long. The other, probably of a compact limestone, represents a human figure on all fours, the arms not being worked out in detail, though the legs are carefully carved. A third leg, smaller than the others, appears in relief in the rear of the figure, between

the other two. The third pipe was found in a mound in northwestern Louisiana and is of earthenware; its height is five and one-half inches. It consists of a human figure seated on the lower limbs which extend backward parallel. The figure holds a pipe in front of it, from the bowl of which ascends a passage through the figure to the mouth, which is open in such manner that smoke emerges from the mouth when the pipe is in use. These pipes will be more fully described and illustrated in a forthcoming paper to be published in the *Journal of the Academy of Natural Sciences of Philadelphia.*

Miniature Indian Baskets.—In an address before the Academy of Science of St Louis, Dr H. M. Whelpley spoke on miniature Indian baskets and exhibited two specimens made by the Pomo Indians which were viewed by means of simple microscopes. The foundation of the baskets is of white leaf willow (*Salix argyrophylla*) and is sewed with California sedge (*Carex barbaræ*). The baskets are made in pattern, black and white, the black being from the root of the California sedge. The larger basket is .18 × .10 inch, with an opening .06 inch across, and weighs one-fourth grain. The smaller basket is .10 × .04 inch, with an opening .04 inch across, and weighs one-twentieth grain. Both baskets are woven in the same manner as large baskets and carefully patterned. The Pomo Indians, living in northern central California, are noted for the excellence of their basketry, which, in workmanship, beauty, and variety of design, is unrivaled in North America. The women are usually the weavers, but the smaller of the two baskets described was made by one of the few men weavers now left among the Pomo.

The American Museum of Natural History is equipping a number of expeditions for summer field work. Dr Clark Wissler expects to visit the Northern Blackfoot of Alberta, as well as the Flatheads and Fort Peck Sioux of Montana, a large portion of the trip being devoted to the investigation of the ceremonial organizations, which have been the subject of intensive study on the part of the Museum staff for a number of years. For the same general purpose the Comanche, Ute, Shoshone, and Santee will be visited by Dr R. H. Lowie, who also intends to spend some time with the Crows in order to obtain additional data on their social organization. Mr N. C. Nelson has already begun an archeological reconnoissance of the lower Rio Grande district. Mr Alanson Skinner will continue to work with the Menomini, and Rev. Gilbert L. Wilson will resume his investigation of the Hidatsa.

At the meeting of the building committee of the Museum of the University of Pennsylvania held on May 4th, the architects submitted their plans for the rotunda to be erected at the south of the present building. The lower portion of this rotunda will provide an auditorium seating 750 persons, while the upper or main floor will be an exhibition hall lighted by means of windows placed high above the floor and close to the roof. The lecture room can be used in connection with the Museum or independently by means of a separate entrance. It was announced at the same meeting that a sum considerably in excess of the amount needed for the rotunda and for its furnishings had been subscribed and the architects were instructed to prepare plans for a further addition. It is expected that the specifications will be complete before the 1st of August.

The trustees of Phillips Academy, Andover, Mass., have authorized the department of archeology to begin an archeological survey of Maine this year. Already the curator, Mr Warren K. Moorehead, has had an agent of the department in Maine for some weeks. A number of camp sites, cemeteries, and other places have been entered on the standard government maps. It is proposed to map the entire state. The indications are that the ancient Indian population was most numerous along the coast, about Sebago lake, on the lower Penobscot, Moosehead lake, and Chamberlain lake. A number of students accompanied Mr Moorehead and others to Maine in June. The excavation of one or two sites was begun in May.

Dr Aleš Hrdlička, curator of the division of physical anthropology, U. S. National Museum, has gone to the Upper Yenisei region of Siberia, to carry on studies and to make collections for the museum and the Panama-California Exposition of San Diego. From the Upper Yenisei he will go to Irkutsk, and such other parts of Mongolia and Turkestan as he may have time to visit. After leaving Siberia he will visit Kiachtata in Chinese Turkestan, Mongolia, and then follow the road to Urga, whence he will proceed along the old caravan route to China proper.

Herr Wilhelm Rehlen, vice-president of the Association of Bavarian Historical and Archeological Societies and of the Anthropological Society, as well as a patron of the Nuremberg Museum, has been through the United States for the purpose of studying archeological collections. Herr Rehlen, while not professionally engaged in archeological research, has been very much interested in the Paleolithic period and has published contributions to this subject.

DR RILEY D. MOORE, aid in the division of physical anthropology, U. S. National Museum, and Mr John P. Harrington, ethnologist, of the School of American Archæology, Santa Fé, New Mexico, will make a trip to St Lawrence island, Alaska, to make observations on the tribe of Eskimo living thereon. The materials gathered are to be incorporated in the exhibits of the U. S. National Museum at the Panama-California Exposition at San Diego in 1915.

THE MUSEUM of the University of Pennsylvania has arranged to send an expedition to the Amazon under the direction of Mr Algot Lange. The expedition will be furnished with a steamer large and seaworthy enough to carry the party from New York to the mouth of the Amazon and up that river for several thousand miles to the tributaries, where the Indian tribes will be studied and collections made for the next three years.

PROF. HENRY MONTGOMERY has been relieved of the curatorship of the Museum of the University of Toronto, at his own request, and henceforth will devote his time and energies to the continuation of his field studies in archeology, commenced about thirty years ago in North Dakota and subsequently extended to Utah, Nebraska, Manitoba, and Ontario.

WE regret to record the death, on April 21, 1911, of Mr A. T. Sinclair, of Allston, Boston, Mass. Mr Sinclair was a keen student of the Gypsies and of the subject of tattooing, and the results of some of his studies have been published in the *American Anthropologist*, the *Journal of American Folk-Lore*, and the *Journal of the Gypsy Lore Society*.

THE PUBLICATION of a quarterly series of *Studies in Linguistic Psychology*, under the editorship of Prof. Robert J. Kellogg, has been commenced by the James Millikin University at Decatur, Illinois. The new publication consists of sixty-four pages and the subscription price is $1.25 a year.

PROF. FREDERICK STARR, of the University of Chicago, will conduct an expedition to West Africa, to cover a period of six months. He will be accompanied by Mr Harry Foster Dean and Mr Campbell Marvin. Especial attention will be given to native arts and industries, religions and folklore.

PROF. FRANZ BOAS returned from Mexico to New York on May 9th, and sailed for London on May 11th in order to attend the Congress of Americanists, where he represented Columbia University, the American Ethnological Society, and the American Philosophical Society.

THE Cornplanter medal for historical research has been awarded to Dr Reuben Gold Thwaites, secretary and superintendent of the Wisconsin State Historical Society, in recognition of his service to Iroquois research in editing and publishing the *Jesuit Relations and Allied Documents*.

ON June 4, the University of Oxford conferred the honorary degree of D.Sc. upon two well-known anthropologists: A. P. Maudslay, president of the Royal Anthropological Institute of Great Britain and Ireland, and Prof. Franz Boas, of Columbia University.

A BIOGRAPHY of the late Dr William Jones, entitled *William Jones, Indian, Cowboy, American Scholar, and Anthropologist*, by Henry Milner Rideout, is in preparation and will soon be published by the Frederick A. Stokes Company, New York.

THE COLLECTION of aboriginal objects from the Caicos islands in the West Indies, described in the last number of this journal by Mr Theodoor de Booy, has been acquired by and added to the collections of George G. Heye, Esq., of New York.

DR J. ALDEN MASON and Mr William H. Mechling, both of the University of Pennsylvania, have recently returned from Mexico, where they have been assisting Professor Boas in the linguistic reconnoissance of Mexican Indians.

PROF. ARTHUR KEITH delivered a series of Hunterian Lectures at the Royal College of Surgeons on February 26 and 28, March 1, 4, 6, and 8, on The Relationship of Neanderthal Man and Pithecanthropus to Modern Man.

A GRANT of $75.00 has been made by the trustees of the Elizabeth Thompson Science Fund to K. Stolyhwo, rue Kaliksta, Varsovie, Poland, for the archeological exploration of the Cave of Lary, Poland.

AMONG the Knights created on the occasion of the birthday of King George, we note the name of Charles Hercules Read, LL.D., President of the Society of Antiquaries.

GEN. JOHN S. CLARK, for many years engaged in a study of the history of the Iroquois, died April 8, 1911, at Auburn, New York, aged eighty-nine years.

DR A. HRDLIČKA, of the U. S. National Museum, has been named a corresponding member of the Société d'Anthropologie de Bruxelles, Belgium.

PROF. ROLAND B. DIXON has left Cambridge for Kashmere, Ladakh, and India, where he will spend several months in ethnological research.

PROF. RUDOLF MARTIN, who has spent some time in Versailles, is preparing his long-expected text-book on physical anthropology.

DR GRAEBNER, of the Rautenstrauch-Joest Museum in Cologne, has commenced to lecture at the University of Bonn.

DR ALFRED M. TOZZER has been appointed assistant professor of anthropology at Harvard University.

THE Lucy Wharton Drexel medal of the Museum of Archeology of the University of Pennsylvania has been awarded to Dr M. Aurel Stein for his explorations in China.